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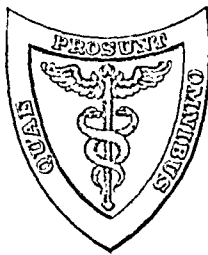
BEWARE OF SUBSTITUTES AND IMITATIONS.

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NEW SERIES.

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THE
AMERICAN JOURNAL
OF THE MEDICAL SCIENCES.

JULY, 1888.

MYXŒDEMA.

FOUR CASES, WITH TWO AUTOPSIES.

BY HENRY HUN, M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM AND OF PSYCHOLOGICAL MEDICINE IN THE
ALBANY MEDICAL COLLEGE.

WITH A REPORT OF THE MICROSCOPICAL EXAMINATION.

BY T. MITCHELL PRUDDEN, M.D.,

DIRECTOR OF THE LABORATORY OF THE ALUMNI ASSOCIATION OF THE COLLEGE OF PHYSICIANS AND SURGEONS,
NEW YORK.

FIRST PAPER.

THE following four cases are typical examples of myxœdema, and their publication may, perhaps, contribute toward the solution of some of the doubtful points in the pathology of the disease:

CASE I.—*Aug. 16, 1884.* Mrs. M., æt. fifty-three; family history is very imperfect, but none of her relatives, so far as is known, ever had a disease similar to hers. Has had five children. They were all cross-births, and were all born dead except the second, who is now a girl of fifteen, and who is troubled with psoriasis. Has never had any severe sickness and has always been strong and healthy. Menstruation ceased four or five years ago, and since that time her face, body, and extremities have been very much bloated, and her eyesight has steadily failed. Her hair has fallen out a great deal, and she is frequently chilly, although at other times she has a very distressing burning and pricking sensation over the skin of the whole body. She suffers much from cold and frequently has cold sweats at night. During the past year she has been much troubled by vertigo, a roaring in her ears, insomnia, and occipital headache. Her speech is slow and difficult. Her mind is dull and confused and her memory poor. She is much troubled by dyspnœa, and when in bed she is obliged to lie on her left side in order to breathe

easily. She feels no pain in her chest, but has a sense of oppression in the upper sternal region, and complains of a pain behind the top of the sternum in swallowing. She complains greatly of an uncomfortable burning sensation in the left hypochondrium. Her bowels are regular. Her urine is scanty and causes a burning pain on micturition. Her appetite is fair. Food, especially ale, causes much bloating of the abdomen. She takes from one to two tablespoonfuls of gin three times a day. Her face, hands, and legs appear as though œdematous. These parts, however, do not pit upon pressure but are firm and elastic. Her complexion is waxy. Her speech is slow, hoarse, and monotonous. Her mind is dull and she answers questions slowly. Abdomen is large and pendulous, otherwise abdominal and thoracic examination is negative. Her movements are sluggish, but there is no paralysis of motion or sensation. Urine is straw-colored and contains neither albumen nor sugar.

Nov. 14, 1886. I have not seen the patient during the past two years. Her appearance does not differ materially from what it was two years ago. The swollen appearance of the skin remains unchanged, the complexion is waxy, with a spot of livid congestion on each cheek, the eyelids are baggy, wrinkled, and translucent; there is a ridge above the inner half of each eyebrow, each naso-labial fold is continued up across the nose by a band of thickened skin just above it, the nose is broadened, the lips are smooth, thickened, and everted. The tongue is swollen and the mucous membrane of the mouth and pharynx pale. The mucous membrane covering the arytenoid cartilages and the false vocal cords is pale and swollen; the vocal cords are yellow, swollen, and do not completely meet in phonation, leaving a small oval between them at their middle. The skin of the hands and legs is similarly swollen and wrinkled and is scaly and of a slightly yellow tinge. The skin of the fingers is thickened and they cannot be completely extended. Plate I. (Figs. 1 and 2) is taken from photographs of this patient's face and hands. None of the swollen tissues pit except upon very deep and long-continued pressure. The hair of the scalp is thin; no hair in axillæ but some hair on the pubes. The nails are small, ridged, and strongly curved. The teeth are loose and brittle, portions of them breaking off frequently. Her hands, feet, and face, and especially her nose, are cold to the touch. She sometimes sweats a little, but usually her skin is dry and rough. There is no alteration in the secretion of her eyes or mouth, but her nose runs a great deal. Except for the pendulous abdomen, the thoracic and abdominal examination gives negative results. No absolute paralysis of motion or sensation, but she is weak and walking is difficult, and she sometimes falls, so that she is afraid to walk in the street. Urine contains a trace of albumen and a few hyaline and finely granular casts.

ELECTRICAL EXAMINATION.—Indifferent pole on the nape of the neck. (MacIntosh combined battery.)

Faradic current. All the nerves and muscles of face respond with tube fully in.

Galvanic current. Measured in milliampères (Gaiffe galvanometer).

	Left.			Right.		
Facial nerve trunk.	KaS 6	AnS 8	AnO absent.	KaS 7½	AnS 9½	AnO absent.
Frontal muscle.	KaS 3½	AnS 6	AnO 10.	KaS 3½	AnS 5½	AnO 10.

The other muscles of the face, although not tested so accurately, give similar results.



PLATE I., FIG. 1.
Photograph of Mrs. M. (Case I.)



PLATE I., FIG. 2.
Photograph of hand of Mrs. M. (Case I.)

Examination of eyes by Dr. Merrill shows vision, right $\frac{20}{xxx}$, emmetropic; left $\frac{20}{xx}$, emmetropic. Range of accommodation good. All the

tissues and media are normal except the optic nerves and retinae; both nerves are pale, the right showing slight atrophy. The retinae are slightly hazy throughout their entire extent. The fields of vision show a slight concentric limitation. R. Nitroglycerine gr. $\frac{1}{30}$ t. i. d.

Feb. 20, 1887. At first the nitroglycerine seemed to afford her some relief, but of late has produced no effect. She is gradually losing strength. Complains of pain in præcordia and of dragging pains in the lower part of the abdomen (which latter feeling was much relieved by an abdominal supporter), and that she can neither hear nor see well, although this is not apparent on actual examination. R. Syr. hypophos. comp. (Fellows), \mathfrak{zj} t. i. d.

March 25. Has slowly grown weaker, and ten days ago her strength gave out rather suddenly, and since then she has been confined to her bed and requires much assistance to sit up in bed. The skin is more swollen and is scaly and rough. There appears to be a slight amount of ascites. Her face is congested and looks as if she had fever. Her temperature, taken on several occasions, is 98.4° in the mouth, and 98.2° in the axilla; pulse 73. A sphygmographic tracing of the pulse is shown in Fig. 1. A week ago her respiration was irregular and exhibited long pauses, but of late it is natural. An examination of the blood shows 4,000,000 corpuscles in a cubic millimetre. Form of disks and ratio of red to white are not materially altered. Bowels are very constipated. Urine sp. gr. 1015 and contains a faint trace of albumen.

FIG. 1.



June 10. Patient remained in about the same condition throughout April, but in May she commenced to improve and has steadily gained strength, so that at the present time, although still weak, she can get out of bed without assistance and sits up most of the day.

Oct. 1. She continues to improve, walks about the room without trouble, and has once or twice been down stairs. She is unable to do any work. The skin of her hands is not as full and puffy as it was but more wrinkled, and is loose and freely movable on the subcutaneous tissues. The appearance of her face has not changed, but the hair on her scalp has grown again and is much thicker. Her voice continues rough and very hoarse, and she is very sluggish both in mind and body. No cedema of the feet but a decided ascites. At times during last summer she sweat a little, but her skin is for the most part dry. Continues to take a little gin daily.

January 22, 1888. This morning she suddenly became comatose, respiration slow and gasping, pulse of fair quality, deeply cyanotic. She lay in this condition, passing water and feces in bed for about twelve hours, and died to-day.

(The daughter of the patient has had, during the past year, a very severe attack of universal psoriasis, from which she made a complete recovery, a couple of months ago; but at present she is suffering from a relapse. Her appearance is myxœdematous.)

Autopsy twelve hours after death: Cheeks cyanotic, lips blue, breasts large, skin of legs rough and scaly. No hair in axillæ, scanty on pubes, slightly scanty on scalp. Skin generally is of white color, and on section shows nothing remarkable. Post-mortem rigidity slight. Scarcely any hypostatic congestion. Normal layer of fat under skin of scalp. Skull-cap of normal thickness, shape, and appearance, moderately adherent. Both surfaces of dura mater appear normal. Very large increase of subarachnoid fluid over surface of brain and at its base. Pia mater normal, except that all its arteries, even to the most minute, present numerous little yellow points due to thickening of their walls, so that the smaller arteries look like chains of alternately opaque and transparent beads. The larger veins of pia mater engorged with blood. The basilar artery moderately, the carotid arteries extremely, thickened and rigid. Ventricles of brain of normal size, except that the posterior horns on both sides are obliterated. Choroid plexus pale, and appears either cystic or gelatinous. Brain substance, perhaps, slightly œdematous, cortex seems normal. Puncta vasculosa of white matter and of ganglia at base well marked. In the superior anterior extremity of body of cerebellum, and extending laterally a little into each hemisphere, especially the left, is a small cavity filled with dark fluid blood. A slight hemorrhage is seen on the outer edge of the right hemisphere of the cerebellum, and scattered just beneath the surface of both hemispheres of the cerebellum, especially the left, are numerous small patches of dark blood, varying in size from a pea to the head of a pin. Choroid plexus of fourth ventricle presents the same appearance as that of the lateral ventricles. Sections through ganglia at base of brain are normal. A thick layer of pale gelatinous-looking fat under skin of back. Spinal cord appears normal on its surface.

A layer one and a half inches thick of pale gelatinous-looking fat over anterior surface of body. Pectoral muscles seem pale and flabby, and are infiltrated with fat. Pouch of fat in neck has, for the most part, disappeared. About half a gallon of clear yellow fluid in abdominal cavity. Position of viscera normal, except that the heart seems unusually large, and the intestines are unusually inflated with gas. About half a pint of clear yellow fluid in pericardial sac. Heart much dilated, and the walls of the left ventricle very greatly hypertrophied, measuring from three-quarters to one inch, the wall of right ventricle being only slightly thicker than normal. Auricles distended with dark blood, partly fluid and partly clotted; ventricles nearly empty. Tricuspid valve admits the tips of three fingers, and the mitral valve the tips of two fingers easily. Mitral valves very slightly thicker than normal. Aortic valves thickened, and present some calcareous deposits at base, but the valves are not sufficiently altered to interfere at all with their functional activity. Muscular tissue of the heart appears pale, but otherwise normal. Coronary arteries thickened and dilated. Arch of aorta generally atheromatous, but no calcareous deposits. Universal firm adhesion of right lung, and to a less degree of left. Hypostatic congestion of lower lobe of left lung, but not of right (she lay on her left side during the last twelve hours of life). Lungs otherwise healthy, and crepitate well.

Thyroid gland is smaller than normal, and presents several hard nodules. Liver of about normal size, and slightly granular. Spleen about normal size, capsule somewhat wrinkled, of firm consistence, and trabeculae unusually distinct. Large deposit of fat in mesentery and omentum. Suprarenal capsules somewhat atrophied, cortices light in color, and presenting small yellow spots. Both kidneys moderately large, anæmic, cortex thickened and slightly opaque, cortical markings and glomeruli unusually distinct. Capsules not adherent. Uterus, ovaries, and appendages normal, except for some senile atrophy. Numerous small ecchymoses on wall of stomach. Urine drawn from bladder twelve hours after death showed albumen one-third per cent.

MICROSCOPICAL EXAMINATION.—The tissues and organs were received fresh and in good condition, and, for the most part, were hardened in Müller's fluid, followed by alcohol. The hardened tissues were imbedded in celloidin, so that the relations of the tissue elements were not disturbed in the operation of section-cutting, nor in the subsequent manipulations. The celloidin was allowed to remain in the sections, which were, in part, mounted in glycerine, in part in balsam; in the latter case the oil of origanum, which does not dissolve celloidin, was used in clearing. The stainings were, for the most part, with hematoxylin and eosin.¹ For the nervous system special methods of hardening and staining were used, which will be noted below.

Fresh skin of abdomen; chemical examination. A determination of the amount of mucin in a weighed quantity of the fresh skin and subcutaneous tissue of the abdomen was made in this case. This was done in the usual way by digestion in baryta water; precipitation with acetic acid; redissolving of the washed precipitate in lime water and reprecipitation, then washing and drying. A control determination was then made, by the same method at the same time, of the mucin in a like quantity of skin and subcutaneous tissue from the abdomen of a fairly well-nourished woman, who had been a moderate drinker, and died of phthisis pulmonalis. A comparison of the results of the two analyses showed that there was no more mucin in the same amount of skin in the myxœdema case than in the other.

Skin of back and abdomen. There was a considerable and irregular accumulation of superficial epidermis cells. The more superficial portions of the papillary layer of the corium appear normal. But just beneath the papillae, in that zone of the corium in which the reticular and papillary layers merge into one another, the lymph vessels are dilated, and the interfibrillar spaces are widely open, so that the fibrillae and the connective tissue cells stand out with unusual distinctness. The smaller bloodvessels of the corium are, in many places, surrounded by scattered collections of small spheroidal cells. The deeper layers of the corium appear normal. The sweat glands are normal.

Scalp. The hairs and sebaceous glands appear normal. Atrophic changes are not present. The distention of the inter-fibrillar spaces and the smaller lymph vessels of the corium just described in the skin, is even more pronounced in the scalp, as is the collection of small spheroidal cells along the smaller veins and capillaries.

¹ For the preparation of the sections and most of the drawings in this and the following case I am indebted to Dr. Eugene Hodenpyl, Second Assistant in the Laboratory of the Alumni Association of the College of Physicians and Surgeons, New York.

Fat. The subcutaneous and other fat tissue show a moderate degree of atrophy, as indicated by the rounded contour, the pigmented protoplasm, and the evident nuclei of its cells.

The voluntary muscles, as represented by the biceps and the pectoralis major, appear normal.

*The nervous system.*¹ The *cortex*, *optic thalami*, and *corpora striata*, are normal. Portions subjected to Golgi's method, Weigert's method, and to nuclear stains, such as carmine, hematoxylin, and eosin, exhibit no abnormality in the arrangement and structural details of the ganglion cells and their processes, nor in the distribution and number of the fine nerve fibres in the gray matter. The perivascular and pericellular spaces are not larger than in control sections of normal cortex hardened in the same way, viz., Müller's fluid eight weeks, eighty per cent. of alcohol without washing, absolute alcohol. Sections from many places in the cortex, stained double and with acid fuchsin and by Golgi's silver and sublimate methods, show that the cortex is normal. There is no increase in the neuroglia. Many of the bloodvessels of the pia and cortex show in different degrees the lesions of a chronic obliterating inflammation.

In and between the *cerebellar folia* are a number of hemorrhages from one millimetre to one centimetre in diameter of comparatively recent origin. These are in part meningeal, in part involve the brain tissue, which is compressed and broken.

The *nerve tracts* and associated structures of the *isthmus*, *crura*, *pons*, and *medulla*, were examined in detail, in carmine and Weigert's hematoxylin stained specimens, and were found normal.

Spinal cord. The anterior and posterior fifth, seventh, and eighth cervical, the first, second, and twelfth dorsal, and the first and second lumbar nerve roots, with sections from corresponding portions of the cord, were fully examined (carmine, Weigert's, and Golgi's staining), and were found entirely normal. The dorsal posterior roots were examined with especial care on account of their relations to the sympathetic system.

Peripheral nerves. The trunk of the vagus, the upper and lower trunks of the brachial plexus on one side, and the radial and ulnar on one side, are normal. Carmine and double staining reveal no increase in the connective tissue, and in sections stained with Weigert's hematoxylin method the nerve fibres are intact and not diminished in number. The myelin in osmic acid stained portions of the radial and ulnar nerves is intact.

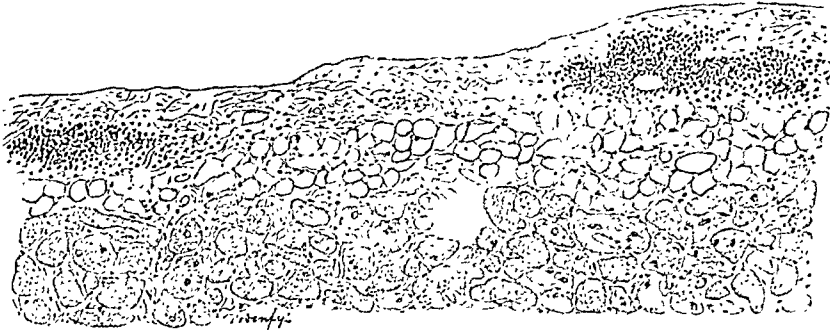
Sympathetic system. The semilunar ganglia (left about 4 millimetres by 18 millimetres in diameter, the right about 3 millimetres by 22 millimetres in diameter) stained by Ranvier's gold method, by hematoxylin, eosin, and carmine stains on both sides, and the great splanchnic on the right side near its junction with the semilunar ganglia, are normal. The middle cervical ganglion (thyroid ganglion) (three by five millimetres in diameter) and the inferior cervical ganglia (nine millimetres in both diameters), are normal. The ganglion cells are not shrunken, a few are pigmented, and the connective tissue is not increased. Several of the

¹ For the preparation of the sections, and for the examination and report on the nervous system, in this and in the following case, I am indebted to Dr. Ira T. Van Gleson, First Assistant in the Laboratory of the Alumni Association, College of Physicians and Surgeons, New York.

numerous branches of both of these ganglia were examined, and are normal. A portion of the trunk of the sympathetic above the thyroid ganglion is normal.

The heart. The muscles appear normal. The coronary arteries and their branches show a moderate degree of chronic endarteritis. Just beneath the surface of the visceral pericardium are numerous scattered collections of small spheroidal cells grouped around dilated bloodvessels (see Fig. 2); these cells lie among the fibres of the pericardial connective tissue, and appear to be the result of local emigration; these collections of cells are widely distributed about the pericardium.

FIG. 2.



Section of external layer of heart muscle, with pericardium. Showing collections of small spheroidal cells about the bloodvessels.

The bloodvessels throughout the body, so far as examined, were the seat of endarteritis, with more or less atheromatous degeneration. This was well marked in the carotids, the thyroid, and the cerebral arteries.

Lungs. The lower lobe of the left lung shows distention of the vessels with blood, and an accumulation of red blood cells in the air vesicles. A few of the branches of the pulmonary artery are the seat of a moderate degree of amyloid degeneration.

Stomach. The small veins about the above-mentioned ecchymotic spots of the mucous membrane of the stomach, in both the mucosa and submucosa, are distended and plugged with red blood cells, leucocytes, and masses of blood plaques; and the regions of the mucosa from which they come show necrosis and superficial disintegration of both the follicles and interfollicular tissue. Minute collections of small spheroidal cells are found here and there in the subserous layers of the stomach, around the smaller veins and capillaries, and blocking up the lymph vessels. Many of the smaller arteries of the submucosa show a considerable degree of amyloid degeneration of the media, while others show a swelling and proliferation of the endothelium.

Spleen. This is apparently normal, save for considerable amyloid degeneration of the smaller arteries.

Liver. There is a slight increase in the interstitial tissue and a moderate dilatation of the capillaries about the central veins.

The pancreas is apparently normal.

Kidneys. The convoluted tubules are in places moderately dilated with compressed epithelium, but they are for the most part normal in size, and their epithelium normal or swollen and unusually granular. The lumina of the tubules contain, in many parts of the cortex, irregular

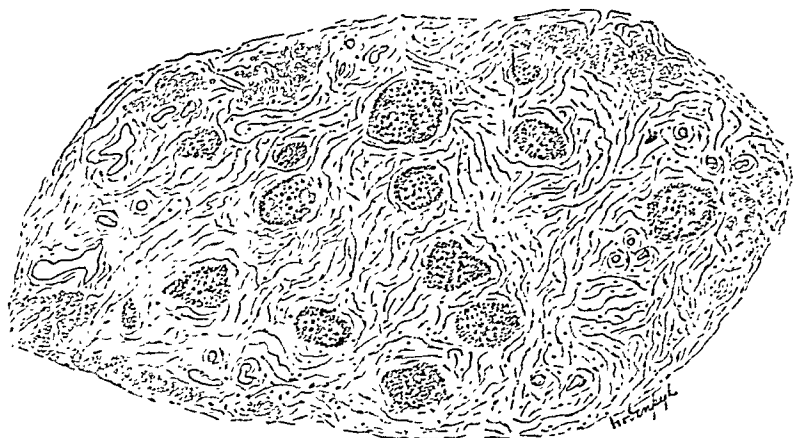
granular masses, hyaline droplets, and disintegrated epithelium. The interstitial connective tissue is increased in amount, especially in streaks and patches about the glomeruli and along the line of the interlobular arteries. The smaller bloodvessels, particularly of the glomerular tufts, are distended with blood. Many of the smaller arteries show a moderate amount of amyloid degeneration.

The supra-renal capsules. Scattered here and there throughout the interstitial tissue of the gland and grouped around the bloodvessels are tiny dense collections of small spheroidal cells, resembling leucocytes. A few circumscribed areas of fatty degeneration of the epithelium are present. In most of these the degeneration is so excessive that the epithelial cell spaces are widely distended and the lumina of the neighboring bloodvessels obliterated. Some of the smaller arteries are the seat of amyloid degeneration.

The thyroid gland. The thyroid gland is symmetrical in shape, but very small and nodular. The lobes measure from one-third to one-half an inch in diameter, and the entire gland weighs 112 grains. A small cyst in one lobe, apparently formed from a group of dilated vesicles, contains fatty cells, cholesterine crystals, and free fat droplets. It does not seem necessary to describe in detail the minute lesions of the thyroid in this case, since they were identical in character with those which will be fully described in the case of Mrs. B. (Case II.), which was first examined.

A large proportion of the atrophied gland was made up of dense connective tissue, so that a transverse section across the lobes had the general appearance represented in Fig. 3.

FIG. 3.



Transverse section through the largest part of one of the lateral lobes of the thyroid gland—about six times the natural size.

There was the same accumulation of small spheroidal cells and of lymphatic tissue about the remains of the gland lobules, as will be described in the next case, but in general the lymphatic tissue had penetrated more deeply into the lobules. So marked was this change that in some parts the entire atrophied lobule was represented by a rounded mass of lymphatic tissue, from one-half to one millimetre in diameter,

in which, buried among the small spheroidal cells in the reticular tissue, were a few small irregular clusters of granular disintegrating epithelium, the sole representatives of the glandular structures.

The following case occurred in the practice of Dr. A. McLane Hamilton, of New York, who requested me to attend the case in the intervals between his visits, and who has very generously allowed me to publish the results of the examinations which I made of the patient during her life and after her death :

CASE II.—*Sept. 17, 1886.* Mrs. B., aged fifty-four. Her family history is good, as far as is known, down to the present generation. One of her brothers died of disease of the brain, one sister had convulsions in infancy and since that time has been weak-minded, and her other brothers and sisters are of a decidedly nervous temperament. The patient had a severe attack of typhoid fever when twenty years old, but since that time has been healthy. She is the mother of five children, has had no miscarriages, and passed the climacteric four or five years ago without any noteworthy incident. Very soon after the climacteric her face commenced to be bloated and has continued to grow gradually more and more bloated up to the present time. Since the climacteric also she has become less and less active and more and more nervous and hysterical. During the past six or eight months she has exhibited slight mental impairment.

At the present time she is constantly in a condition of great nervous excitement, is continually walking about, will not remain seated, and feels inclined to scream. She complains of much distress in her head, cannot bear any loud noises, and is afraid of becoming insane. She has but little appetite and complains of much distress in the epigastrium, apparently due to flatulence, is slightly constipated, and her urine is abundant. She scarcely perspires at all; her mouth is dry and pasty; she has no tears, and it distresses her greatly that she cannot weep over the death of her mother which took place recently; her skin, especially her nose, is constantly cold, and her hair is thin.

Patient is rather fleshy; her complexion is waxy, with a spot of livid congestion on each cheek. The face is swollen; the eyelids are baggy, wrinkled, and translucent; there is a ridge above the inner portion of each eyebrow; the naso-labial fold is continued up over the nose by a thick ridge of tissue just above it; the alæ and tip of the nose are swollen, the lips are swollen and smooth and the lower one everted. The tongue is swollen, and the whole mucous membrane of the mouth and pharynx is anæmic and covered with a dry, whitish mucus which feels so unpleasant that she is constantly rinsing her mouth with water.

The skin of the body generally is thickened, does not pit on pressure, scaly, has a slightly yellowish hue, and is cold to the touch, especially the nose, hands, and feet. At the outer edge of the right eyebrow there is a patch of chloasma, and on the scalp are large yellow patches of scaly cuticle, and the skin of the axillæ is of a dark brown almost black color, otherwise there is no pigmentation except the faint yellow tinge of the entire skin. The hair on the scalp is rather thin; there is no hair in the axillæ; she has a very few hairs on the chin, and the fine hair on the body is well developed. The nails are well formed, except that

some of them are grooved longitudinally and they are very brittle. No thyroid gland can be felt. There is no abnormal compressibility nor mobility of the trachea. There is a large fatty tumor in the supraclavicular fossa on each side of neck. Thoracic examination gives negative results. Abdominal walls are greatly distended, relaxed, and pendulous. The liver is dislocated downward and is abnormally movable. Urine contains neither albumen nor sugar. Sensibility, reflexes, smell, taste, hearing and sight are normal. All movements are sluggish and a little weak. Speech is slow. When she speaks in a shrill key her voice is fairly clear, but when in a deeper tone her voice is rough and hoarse. Pulse is 68, small. A sphygmographic tracing is shown in Fig. 4. Examination of the blood shows 3,806,000 corpuscles in a cubic millimetre. The appearance of the corpuscles and the ratio of the red to the white are not materially altered.

FIG. 4.



ELECTRICAL EXAMINATION.—Indifferent electrode on nape of neck.
Faradic current. MacIntosh combined battery.

	Right.	Left.
Facial nerve trunk in front of ear.	All muscles respond with the tube fully in.	All muscles respond with tube withdrawn $\frac{1}{2}$ inch, and all but the muscles supplied by the inferior branch respond with tube fully in.
Orbicularis palpebrarum muscle.	Responds with tube fully in.	Responds with tube fully in, and from this motor point of the orbicularis the frontal muscle also contracts with tube fully in.
Frontal muscle.	Responds with tube fully in.	Responds with tube withdrawn $\frac{1}{2}$ inch.
Zygomatic muscle.	Responds with tube fully in.	Responds with tube withdrawn $\frac{1}{2}$ inch.

In general, the muscles of the right side not only respond to weaker currents, but are also quicker in their contraction, the muscles of the left side acting rather sluggishly and continuing for some time in a state of contraction, as is also the case in a less degree with those of the right side. This sluggish contraction of the muscles disappears when strong currents are used, and is more noticeable with the faradic than with the galvanic current. There is no apparent reason why the frontal muscle should contract more readily from the motor point of the orbicularis palpebrarum muscle than from its own motor point.

Galvanic current. Measured in milliamperes (Gaiffe galvanometer).

	Right.	Left.
Facial nerve trunk.	KaS $3\frac{1}{4}$ AnS 10 AnO absent.	KaS $5\frac{1}{2}$ AnS 9 AnO absent.
Orbic. palpeb. muscle.	KaS 2 AnS $5\frac{1}{4}$ AnO $6\frac{1}{2}$.	KaS $2\frac{1}{2}$ AnS $6\frac{1}{2}$ AnO $8\frac{1}{2}$.
Frontal muscle.	KaS 2 AnS $3\frac{1}{2}$ AnO absent.	KaS 5 AnS 6 AnO absent.
Zygomatic muscle.	KaS 8 AnS $9\frac{1}{2}$ AnO absent.	KaS 9 AnS 11 AnO absent.

In 1877, and again in 1881, Dr. Merrill examined the patient and found vision $\frac{20}{XX}$ in each eye. An examination by Dr. Merrill at the present time shows vision $\frac{20}{XL}$ in each eye, not improved by glasses.

Each eye shows a manifest hypermetropia of $\frac{1}{8}$. Tension of the globes normal, range of accommodation good, and the action of the external ocular muscles perfect. Color perception perfect. Fields of vision show a marked symmetrical limitation (see Fig. 5). The ophthalmoscopic examination shows the media to be clear, a slight atrophy of the optic nerves, and some œdema of both retinæ which is uniformly diffused over the whole retina.

FIG. 5.

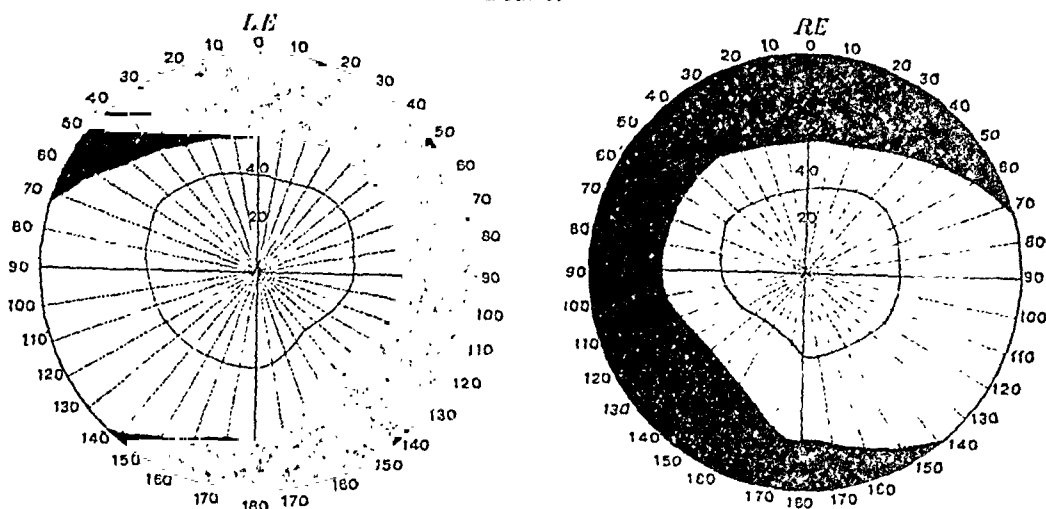


Diagram of the field of vision.

From Sept. 14th to 23d numerous temperature observations were taken, which showed a lower temperature on the left side of from two to four-tenths of a degree; the axillary temperature being from one-half to one degree below the normal.

R. Elixir ferri lact. $\frac{3j}{t}$ i. d. R. Nitroglycerine gr. $\frac{1}{100}$ th four times a day, to be increased in a few days to gr. $\frac{2}{50}$ th t. i. d. Patient was also given, as occasion required, a sedative mixture containing bromide of potassium and cannabis indica.

Oct. 14. In many respects there is decided improvement. She is less nervous and restless, is less disturbed by noises, has more control over herself, is willing to see a few friends, and goes out driving. Her mouth and tongue are less dry, her pulse is fuller, her skin is warmer than it was, her temperature normal, and she occasionally perspires a little. Her mind is weaker and more childish. Her walk is weak and awkward and at times she would fall were it not for her nurses.

20th. Since the last record she has refused to take any medicine. Has had no hallucinations, but now for the first time exhibits delusions. She maintains that her eyes have no longer their normal appearance, that she cannot really see and is afraid to go to sleep because she is convinced that she will awake entirely blind. She complains of much backache.

22d. At noon to-day a decided change took place. The expression of her face greatly altered and she has the appearance of a bewildered, insane person. She exhibits many delusions; she says that she cannot see, that her throat is rapidly closing so that she cannot swallow, and that she cannot talk; she says a few words perfectly distinctly and then repeats such sounds as ga, ga, ga, ka, ka, ka, gee, gee, gee, au, au, au,

hi-i-i, etc. She complains of pain in the right hypochondrium and constantly keeps her body strongly bent over to the right side. She is extremely wild and excited and constantly in motion.

Nov. 8. She still refuses to take any medicine and for the past two days has refused food, although after much persuasion she took a little to day. She continued to be very excited and delirious till the first of this month, when she passed into a condition of stupor or bewilderment. She was very dull and her mind acted very slowly; more than a minute elapsed after a question was asked before she answered it. This quiet, dull condition only continued a few days, and of late she has been steadily growing more and more excited, and yesterday and to-day she has been very insane. She is sure that the dead bodies of her children are lying up-stairs because she can smell them. Everything about her she thinks is poisoned and she is afraid either to eat or drink.

18th. Since the last record she has taken no nourishment whatever until to-day when she took a little fruit. Her abstinence from food, which started from the delusion that everything was poisoned, has been continued by the delusion, which has been very prominent during the past week, that she is very poor and has no right to eat food which she cannot pay for. On account of this delusion of poverty she is constantly trying to pack up a few of her things and leave the house. The skin seems colder to the touch, but the temperature is 98.8° in both axillæ and 100° in the rectum.

Dec. 8. The swelling of her face and hands has seemed to vary a little during her sickness from time to time, and is now rather less than it was. She no longer complains of any dryness of the mouth nor does it seem to be dry, and there is often a free discharge of water from the mouth, but no tears. She perspires at times, and once her body was covered with sudamina. During the past month she has been entirely oblivious of the calls of nature; she does not soil herself, but never passes either urine or feces unless the nurses sit her on the closet and tell her to do so.

Jan. 21, 1887. During the past month the patient has continued to be much confused. She has slept but little and has been very restless, and much of the time violent and delirious. Her pulse and temperature have continued normal. During the past week she has had much diarrhœa and has become weak and emaciated, and the masses of fat on each side of the neck just above the clavicle have disappeared. During the past month she has been given two or three nutritive enemata every day when the condition of the bowels would allow of it. Yesterday she was so weak that she remained in bed all day; last night she became comatose, and this morning she died.

Autopsy, seven hours after death. Post-mortem rigidity marked. Slight hypostatic congestion. Moderate amount of subcutaneous fat of dark yellow color. Very little blood in the tissues and organs. Each lobe of the thyroid gland was a flattened ovoid body measuring one, three-quarters, and half an inch in its three dimensions. The fatty tumors had disappeared from the side of the neck. The right lung was free from adhesions, the left being strongly adherent posteriorly and to the diaphragm. Slight œdema of inferior lobe of each lung, the upper lobe being anæmic. Pericardium empty, right ventricle flabby, left firmly contracted and slightly hypertrophied, considerable sub-pericardial fat which has a gelatinous appearance. Surface of liver somewhat granular, sections of the organ appear normal, gall-bladder full of dark-green bile. Spleen is firmly adherent to diaphragm, its capsule is thickened, and the

whole organ is contracted and dense, measuring four and two and a half inches. The suprarenal capsules are atrophied. The kidneys show well-marked lobulation, their capsules are rather adherent, their surface on section appears normal. The ovaries are white and atrophied. There are several small fibroids in the uterine wall. The mesentery contains a small amount of yellow fat, no mesenteric glands are visible. The intestines contain several large lumps of hardened feces. The scalp (except for the thinness of the hair) and the calvarium appear normal. Both the small and the large veins of the pia mater are distended with blood. There is a large amount of subarachnoid fluid over the surface of the brain, and there is a general narrowing of the convolutions which is especially marked at the posterior part of the superior parietal lobule on the right side. Sections through the hemispheres and the ganglia at the base reveal nothing abnormal except a general œdema. The ventricles are of normal size and appearance.

MICROSCOPICAL EXAMINATION.—The portions of tissues and organs received had been hardened in Müller's fluid and alcohol, and were well preserved. Blocks of the various parts were embedded in celloidin, and the sections stained with hematoxylin and eosin.

Nervous system. The *cortex of the brain* and the *cerebellar folia* are normal. With carmine, hematoxylin, and eosin double staining the perivascular and pericellular spaces are not enlarged, and the ganglion cells present their proper topography and structural details. With Weigert's method the fine fibres in the gray matter are not diminished in number. Neuroglia not perceptibly increased. The isthmus and spinal cord are normal. A portion about one-half millimetre in diameter, of the nucleus cuneus is detached and lies external and posterior to the lateral angle of the nucleus.

Skin and fat. In the skin of the abdomen and thigh the layer of superficial epidermic cells is thick and irregular, the cells being in part packed in dense layers, in part lying in loose, more or less voluminous shreds.

The delicate fibrillated fibres of the papillary and subpapillary layers of the corium are unusually distinct, and appear as if they were or had been crowded apart by some homogeneous material the nature of which I am unable to determine. Thus while the outer layers of the corium appear relatively thicker, they are less dense than normal, and there is no apparent increase either of the fibrillated or the elastic fibres. The deeper layers of the corium appear normal. There are small, irregular, and scattered collections of small spheroidal cells, which have the appearance of leucocytes, about the smaller bloodvessels of the more superficial layers of the corium. The bloodvessels contain about the usual amount of blood, do not appear compressed, and are apparently normal. The sweat glands are normal.

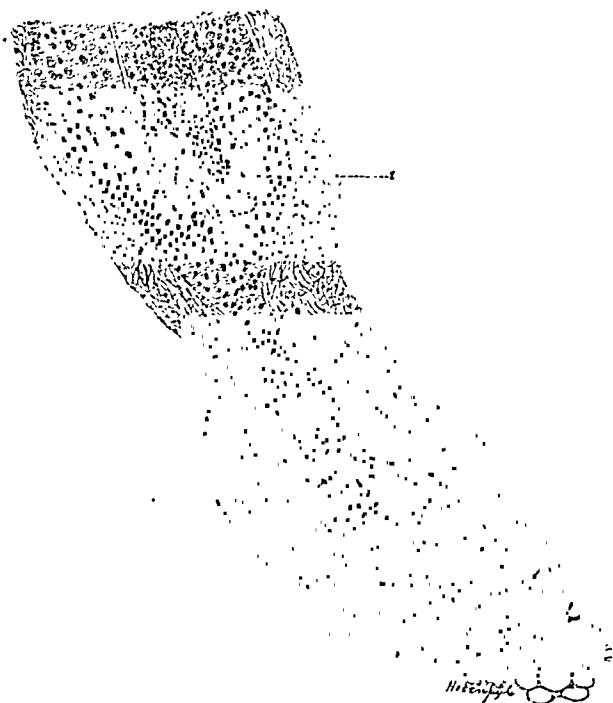
Fat. The subcutaneous fat of the abdomen and thigh differs from normal adult fat in that the individual fat cells are in places unusually distinctly outlined, and present more or less rounded contours, while distinct intercellular spaces are abundant. Large, distinct nuclei and a zone of protoplasm are frequently present in the fat cells; while about the nuclei, in many cells, is a small accumulation of yellow granular pigment. The fat tissue has thus in general more the characters of atrophic or embryonic fat than that of well-nourished individuals. This

condition of the fat is, however, not uniformly present, but appears only in scattered areas.

The scalp. The superficial layer of the epidermis is thick and irregular. While a portion of the hairs appear normal, a large part of them present various phases of atrophy.

From some of the follicles the hairs are absent, and the follicle is represented by an irregular elongated mass of cells. In others the bulb is atrophied, and is merged with the papilla into a dense irregular knot containing but little pigment (Fig. 6, *a*.) Passing upward from this is a solid mass of cells, irregularly packed together, replacing both the shaft and the root sheaths (Fig. 6, *b*). The dermic coat of the follicle, on the

FIG. 6.



Atrophied hair follicle from scalp. *a*, atrophied bulb and papilla; *b*, deep portion of follicle; *c*, thickened dermic coat; *d*, hyaline degeneration in dermic coat; *e*, false bulb from which the hair grows, without a papilla.

other hand, is thickened and unusually dense in texture, and the inner layer of that portion just above the bulb is converted into an irregularly lobulated hyaline mass containing few nuclei (Fig. 6, *d*). Above this the hair shaft takes its origin in a large bulging mass of epithelial cells, representing the cells of the outer root sheath, but is without a papilla. These may be called *false hair bulbs* (Fig. 6, *e*). The outer root-sheaths above the false bulbs are frequently rough and irregular in their contours.

The *sebaceous glands* are in general much atrophied, and lie beside the hair follicles in the form of irregular, narrow, cylindrical bags, containing but few—not infrequently a single row—of the characteristic secre-

tory cells, or in some cases none at all. Not infrequently slender, accessory hairs originating near the mouths of the sebaceous glands, in small false bulbs, issue obliquely from the atrophied follicles. There are collections of small spheroidal cells about the smaller bloodvessels of the corium, but the bloodvessels appear otherwise normal. We have thus in the scalp the lesions of simple alopecia.

The heart shows a moderate amount of dense connective tissue in patches beneath the surfaces of the papillary muscles of the left ventricle and extending in streaks into the muscle tissue. The heart is otherwise normal.

The subpericardial fat presents in much more marked degree than the subcutaneous fat, the lesions of atrophy of the fat cells, so that they exhibit in their rounded contours, in their large, well-formed nuclei and protoplasmic disks, and in their wide, intercellular spaces, a most marked embryonic type.

The spleen shows a moderate thickening of the intima of the smaller arteries and considerable hyperplasia of the reticular stroma of the pulp. The glomeruli are normal.

The liver shows an irregular thickening of the capsule and a considerable increase in the interlobular connective tissue, which is richly supplied with small spheroidal and fusiform cells. There is a moderate degree of fatty infiltration; there is no increase in the lymphatic nodules of the liver.

FIG. 7.



Section of atrophied thyroid gland. Low power. *a* and *b*, atrophied lobules; *c*, new-formed lymphatic tissue in the periphery of lobules.

The kidneys show a considerable increase in the interstitial tissue of the cortex, especially about the glomeruli and along the lines of the interlobular arteries; this new connective tissue is, for the most part, richly cellular. The tufts of the glomeruli are frequently replaced by dense knobs of connective tissue. There is, corresponding to the increased amount of interstitial tissue, atrophy of the uriniferous tubules. Many of the convoluted tubules are dilated, their epithelium flattened

or disintegrating at the free borders, or absent. Hyaline casts are present in moderate number in the straight tubules.

The thyroid gland. The capsule of the very small, hard, and nodular thyroid gland is denser in texture and thicker than normal, and contains numerous small arteries and dilated thin-walled veins, and capillaries which are in places greatly distended and irregularly pouched with blood. The thickened capsule merges on the inside imperceptibly into the dense interstitial tissue of the gland. The appearance of the lobes of the gland itself, as seen in transverse sections, differs in marked degree from the normal, not only on account of its greatly diminished size, but because of the greatly increased amount of interstitial tissue in proportion to the parenchyma (Fig. 7). The interstitial connective tissue occupies from one-half to two-thirds of the section area in all parts of the gland; this interstitial tissue is, for the most part, dense and fibrillar, and is irregularly distributed; it contains numerous thin-walled blood-vessels, which are in places distended and pouched with blood. Fusiform and small spheroidal cells are in general scattered in moderate numbers among its fibres. In some places, on the contrary, the connective tissue about the bloodvessels is densely infiltrated with small spheroidal cells, having the appearance of leucocytes.

FIG. 8

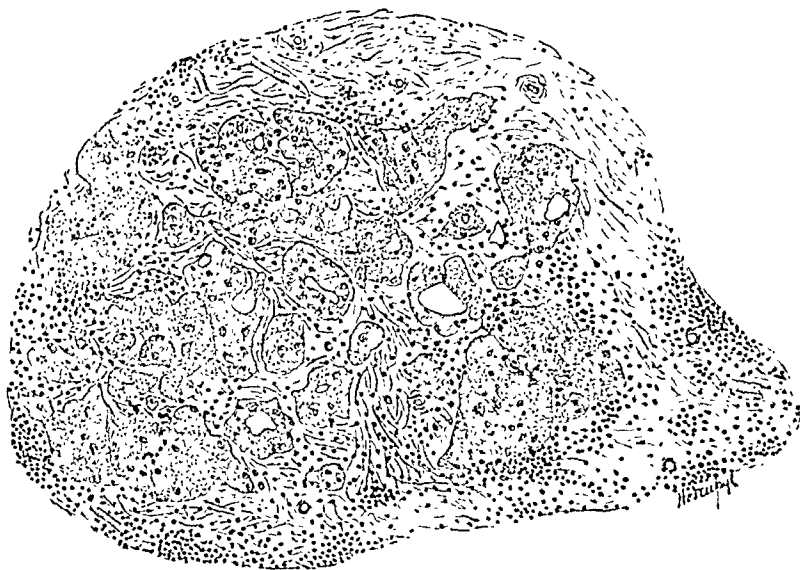


Section from periphery of atrophied lobule of thyroid gland. Showing irregularly formed gland vesicles, surrounded by lymphatic tissue.

But it is the parenchyma of the gland which presents the most marked and striking alteration. Scattered here and there throughout the atrophied gland are little islets of gland tissue (Fig. 7, *a*), the largest from three to four millimetres in diameter, the smallest scarcely visible to the naked eye, composed of a congeries of larger and smaller rounded or irregular-shaped vesicles, which are either regularly lined with moderately granular, flattened, or cuboidal epithelium, or completely or nearly completely filled with a multinucleated granular cell mass or a clump of irregular shaped, more or less distinctly outlined cells (Fig. 8). The vesicles or cell cavities possess a very thin membrana propria, and are surrounded by a regular capillary network. These masses of vesicles apparently represent the lobules of the thyroid, and the larger vesicles are usually in the centre, the smaller in the periphery of the lobules. A few of the larger vesicles contain colloid material.

Then there are somewhat similar lobules of gland tissue, so small as to be generally invisible to the naked eye, whose vesicles throughout are very small, and for the most part completely filled with irregular granular cells (Fig. 9). Two or three of these islets of gland tissue may lie side by side, but they lie, for the most part, singly, and separated from each other by broad bands of interstitial tissue.

FIG. 9.



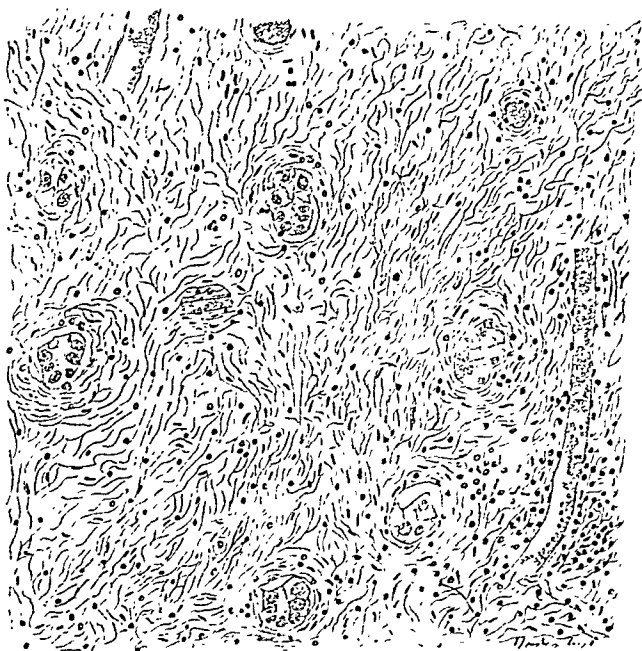
Very much atrophied lobule of thyroid gland. Showing masses of granular epithelium in place of the normal vesicles.

Finally, scattered everywhere in the interstitial tissue, are large granular cells or cell masses (Fig. 10) which have the same morphological characters as the epithelium above described in the larger and smaller lobules, but lying singly.

In the periphery of most of the islets of gland tissue, is a great accumulation of small spheroidal cells, lying in the interspaces of a rich vascular network (Fig. 7, *c*, and Fig. 8).

his peripheral accumulation of cells is sometimes in the form of a dense, sharp-edged, narrow band; but is most frequently somewhat

FIG. 10.



Interstitial tissue of atrophied thyroid. Showing scattered epithelial cell masses.

FIG. 11.



Shaken section from periphery of atrophied lobule of thyroid. Showing the underlying reticulum of the new-formed lymphatic tissue. a, nuclei of the reticular tissue.

diffuse at the edges and extends inward among the gland vesicles in wedge-shaped masses or branching streaks. Where this small cell accumulation is moderate in amount, the cells lie around the bloodvessels between the fibrillated fibres of the interstitial tissue, or along the capillaries between the gland vesicles, so that they appear as if due to an emigration of leucocytes. But where the accumulation is voluminous, an examination of sections from which the small spheroidal cells have been removed by pencilling or shaking under water, reveals a most marked and highly developed genuine reticular tissue quite similar, save for its distribution, to that which forms the reticular framework of the lymphatic nodes (Fig. 11). This reticulum has its distinct nodal points of intersection upon which lie flattened cells with moderately large, round, or ovoidal nuclei (Fig. 11, *a*). This reticular tissue merges, on the one hand, into the fibrous interstitial tissue, and, on the other, into the small amount of tissue accompanying the capillaries about the gland vesicles.

In a few places small masses of spheroidal cells lying in the meshes of a tiny mass of reticular tissue were found, apart from the glandular structures. These resemble the small masses of lymphatic tissue which, as shown by the researches of J. Arnold, are normally present in various organs—liver, lungs, kidney, etc.

We have thus in the thyroid, in addition to a relatively large amount of interstitial connective tissue and an excessive atrophy of the parenchyma, an actual new formation in considerable amount of lymphatic tissue, both in isolated nodules and around the atrophied lobules.

For the opportunity of examining and reporting the following case, I am indebted to Dr. Franklin Townsend, of Albany, whose patient he is:

CASE III.—*January 15, 1887.* Mr. Y., æt. thirty-six, unmarried. His father is healthy, but lethargic. The mother and the three children all have a more or less myxœdematous appearance. The patient is the oldest of the three children. He probably had syphilis about ten years ago. He was thoroughly treated for it, and, finally, went to the Hot Springs of Arkansas, from which he returned, in 1878, in first-rate health. Between 1880 and 1884, he made several trips to New Mexico, being interested in some mines, and during his last visit there he thinks he contracted his present sickness. Before the disease made its appearance he was in the habit of smoking to excess, and drank from twelve to fifteen glasses of beer daily. He came to Dr. Townsend in August, 1884, for treatment on account of a scaly fissured eczema behind his ears, and at that time he presented the following symptoms: His face, lips, legs, and ankles were swollen and pitted somewhat on deep pressure, his eyelids were baggy and wrinkled, there was a bridge of thickened tissue across the nose, his tongue was so swollen that he talked with great difficulty, and his voice was rough and hoarse. The skin of his body was white except for a decided yellow tinge under the nails of the fingers and toes, and a patch of chloasma on the right temple and the right side of the face. His skin was dry and itched somewhat, the epidermis peeled off in great quantities, and his hair was brittle and broke off in large quantities, about one-quarter of an inch above the scalp. His actions were sluggish, and he was so weak that he twice fell in the street, once when he was trying to catch a horse-car. His mind was sluggish, it took him a long time to answer questions and his memory was poor.

A careful examination of the thorax and abdomen revealed nothing abnormal, except a decided enlargement of the liver. Urine was normal. Pulse about 60.

He was given iodide of potassium, grs. 40 t. i. d., which was increased to grs. 90 t. i. d. This he took for about a month and seemed to improve on it. He was not iodized by it, but, finally, it upset his stomach. A little later he took arsenious acid, gr. $\frac{1}{60}$ t. i. d., increased in two months' time to gr. $\frac{1}{24}$ t. i. d. without any good effect. During these three months of treatment his stools were always white. He then took quinia sulph., pil. hydrarg., aa gr. j t. i. d., which caused his stools to change to a light brown color. Still later he took a pill of ox-gall, mercury, and quinine and then stopped taking medicine. From the commencement of treatment, in August, the liver steadily decreased in size.

The disease reached its height toward the end of 1884, and remained stationary throughout 1885, the swelling of the face showing slight variations at times. In the spring of 1886 he commenced to improve, and since that time he has been slowly improving in all respects. The face is much less swollen than it was, and the swelling of the legs and feet has disappeared entirely. The skin is less yellow than it was in 1885, and the spot of chloasma on the right side of the face has nearly disappeared. His skin is less scaly, and he sometimes perspires now, although for a long time he did not perspire at all. He is not quite so badly affected by the cold as he used to be, and this winter he has remained North, although every previous winter he has gone to the Southwest with the advent of cold weather. He is physically stronger, his mind is brighter, and he answers questions more promptly.

At the present time there is a slight yellow tinge to the skin generally, which is especially marked over face and vertex of head. The skin is scaly, the complexion is waxy, and on friction spots of congestion appear on the cheeks and persist a long time. The whole top of the head appears bald, but on close inspection is found covered with short, brittle stumps of hairs. Eyebrows, moustache, beard, hair on body fairly well developed; the hair being especially abundant on the front of the chest. The nails are ridged, and he says they are extremely brittle, and on that account trouble him greatly. The face is swollen, and pits only on long-continued pressure. The swelling affects especially the lips, which are much everted, and of a bluish color, the nose and cheeks are also swollen, and, to a less degree, the forehead; the under eyelids are baggy and wrinkled, but the swelling is much less than it was a year ago. The tongue and soft palate, and, to a less degree, the hard palate, are anæmic and much swollen. The mucous membrane covering the epiglottis, the arytenoid cartilages, and the false and true vocal cords is anæmic and swollen. The epiglottis and vocal cords are less swollen than the other parts, and present a slight, but evident, yellow tinge, and the vocal cords do not meet perfectly in phonation, but leave a slight oval between them near their centre. The two cords move symmetrically. No thyroid gland can be felt, and there is no history of any goitre. The trachea is not particularly movable nor compressible. There is a slight fulness above each clavicle, but no fatty tumor in that region. The patient is weak. No disturbance of tactile, painful, or thermic sensibility. Plantar reflex absent on both sides. Knee-jerk normal on both sides. Thoracic and abdominal examination negative. Urine presents a normal appear-

ance, no sediment, sp. gr. 1030, and contains neither albumen nor sugar. An examination of the blood shows that there are 4,001,000 corpuscles to the cubic millimetre, that the corpuscles are of normal appearance, and that the ratio of the white to the red corpuscles is not materially altered. A sphygmographic tracing of the pulse is shown in Fig. 12.

FIG. 12.



ELECTRICAL EXAMINATION.—The indifferent electrode on nape of neck:

Faradic current. All nerves and muscles respond with tube fully in, the muscles of the right side contracting more strongly than those of the left.

Galvanic current. Milliampères (Hirschberg galvanometer).¹

	Right.	Left.
Facial nerve trunk.	KaS 2 AnS 3 AnO 4.	KaS 2½ AnS 3½ AnO 4½.
Frontal muscle.	KaS 1½ AnS 2 AnO absent.	KaS 1 AnS 1½ AnO absent.
Zygomatic muscle.	KaS 1½ AnS 2 AnO absent.	KaS 2½ AnS 3 AnO absent.

The muscles respond with a quick contraction to each kind of electricity.

An examination of the eyes by Dr. Merrill shows vision: Right $\frac{20}{XL}$, with correcting cylinders vision is $\frac{20}{XXX}$. Left $\frac{20}{XL}$, with correcting cylinders vision is $\frac{20}{XXX}$.

In 1877 the patient consulted Dr. Merrill on account of blepharitis and asthenopia, which were found to be due to astigmatism, and were corrected by proper cylinders. This refraction is the same now as then, although the vision has failed somewhat. It was then, without glasses, $\frac{20}{XXX}$ in each eye; and with proper glasses $\frac{20}{XX}$. On ophthalmoscopic examination nothing abnormal was noted, except a haziness extending throughout the entire extent of both retinae. The fields of vision show a marked concentric limitation, almost as great as in the case of Mrs. B., Fig. 5.

Patient states that he has been constipated throughout his sickness. He has noticed no alteration in the secretion of his eyes, nose, or mouth. He now weighs 145 pounds, and never weighed more than 155 pounds. He eats very little meat, and takes but little food of any kind. Pulse is 70 after walking. He sleeps well. His arms and legs used to be constantly going to sleep, and even at the present time the region of the distribution of the right ulnar nerve becomes numb, and goes to sleep every night.

April 2, 1888. During the past year the patient has continued to improve slightly.

¹ The Galffe galvanometer used in the two former cases has been recently tested and found to be accurate. When the Galffe and Hirschberg galvanometers are compared with each other, the former registers twice as high as the latter; so that the numbers given in the third and fourth cases are probably only one-half what they should be.

The following case was kindly referred to me by Dr. McLean, of Troy:

CASE IV.—*January 30, 1887.* Mr. S., æt. twenty-seven, unmarried. His mother is healthy; she had eight children; two died in infancy, and six are living. His father has not been able to work for several years on account of disease of the kidneys. His oldest sister has heart disease; another sister has Bright's disease, and his two other sisters are affected somewhat as he is. He has always been weak, and could not play as vigorously as other boys. When fourteen years old he had two slight attacks of jaundice. His present sickness commenced when he was eighteen years old, but exactly how, he cannot remember. He grew steadily worse, till two years ago, since which time he has improved a little. His sister says that up to the age of eighteen years his skin was remarkably soft and white.

Patient now complains that he is so weak that he can walk only a short distance. He is much troubled by dizziness and by pain in the back. His feet and hands are cold and numb, and he cannot bear cold weather. He always feels worse in hot weather, and he becomes much bloated. At such times he cannot see his knuckles, and the wrinkles disappear from the skin. When it is alternately hot and cold, the skin becomes much wrinkled and cracked. At one time he had an abundant crop of hair on his head, but now it has mostly fallen out, as has also the hair on his body. He has a great deal of watery discharge from the nose, a superabundance of saliva, and he also cries easily, having an abundance of tears. The saliva seems to come especially from the right side of his mouth, and his right nostril discharges much more freely than the left, but he notices no such difference between his eyes. He is subject to hemorrhages, and has had some severe hemorrhages from the nose, from the gums, and from the bladder. Almost every night there is a discharge of watery blood from his mouth. His hearing is good, but his sight is dim. His memory is poor; he is not troubled by headaches, and never had any delusions, nor anything resembling insanity. He sleeps poorly, and is much disturbed by vivid dreams of an unpleasant character. No thoracic symptoms, except slight palpitation. Appetite good; some distress after eating; bowels rather costive.

His appearance is dull and stupid. His speech is slow, hoarse, and monotonous. The skin has a yellow tinge, and is swollen and wrinkled. It does not pit except slightly after long continued and deep pressure. The eyelids are baggy, wrinkled, and translucent; there is a ridge above the eyebrows; the naso-labial fold is continued up over the nose by a band of thickened skin above it: the lips are swollen and everted. The tongue is much swollen, as is also the mucous membrane of the pharynx to a less extent. The mucous membrane of the larynx appears only slightly swollen, and the vocal cords are thickened, and not entirely approximated in phonation. The entire mucous membrane is anæmic. The skin of the body is covered with thick yellow scales. These scales can for the most part be removed by hard and continuous rubbing, but they quickly form again. They are on the face and scalp as well as on the body, arms, and legs, and are especially thick and rough on the feet and on posterior aspect of elbows. The hair of the head is extremely thin; the hairs are not broken off, but each hair is separated from its neighbors by a large space. There are no hairs on his body, nor in the axillæ, and only a few hairs on chin and pubes. Plate II., Fig. 2, and Plate III.,

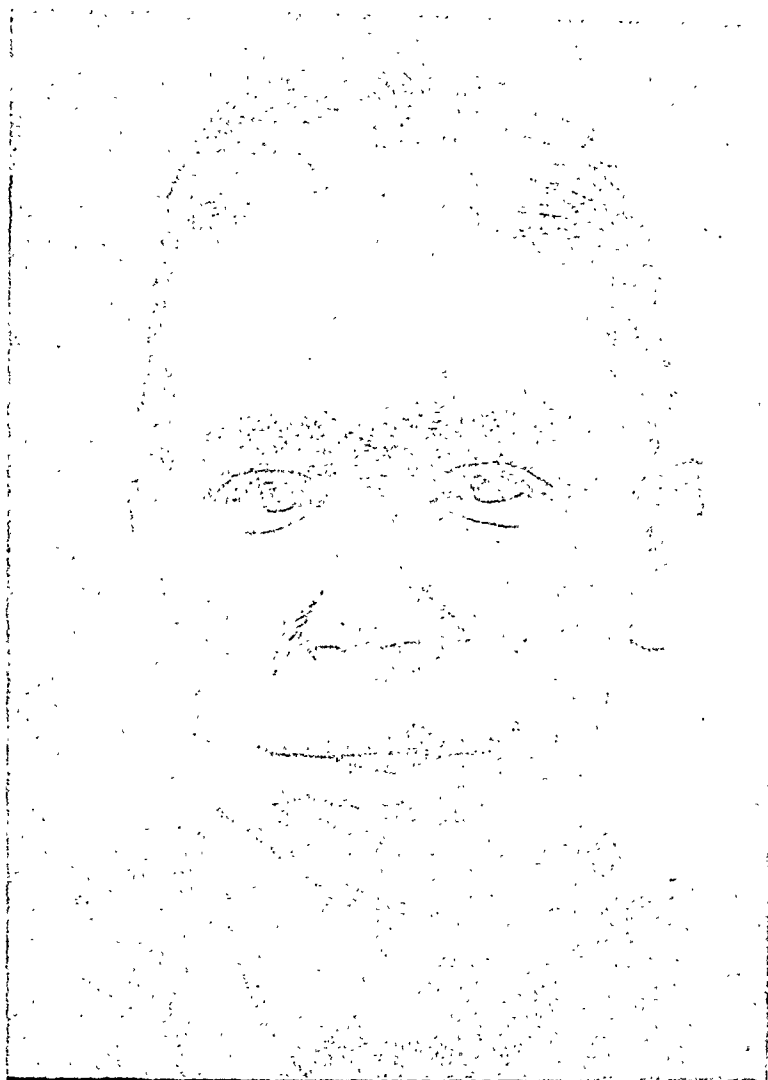


PLATE II., FIG 2.
 Photograph of Mr. S. (Case IV.)
 which was taken recently.



PLATE II., FIG. 1.
 Photograph of Mr. S. (CASE IV.) which was
 taken when the disease was commencing.

1



PLATE III, FIG. 1.

Photograph of back of hand of Mr. S. (Case IV.)

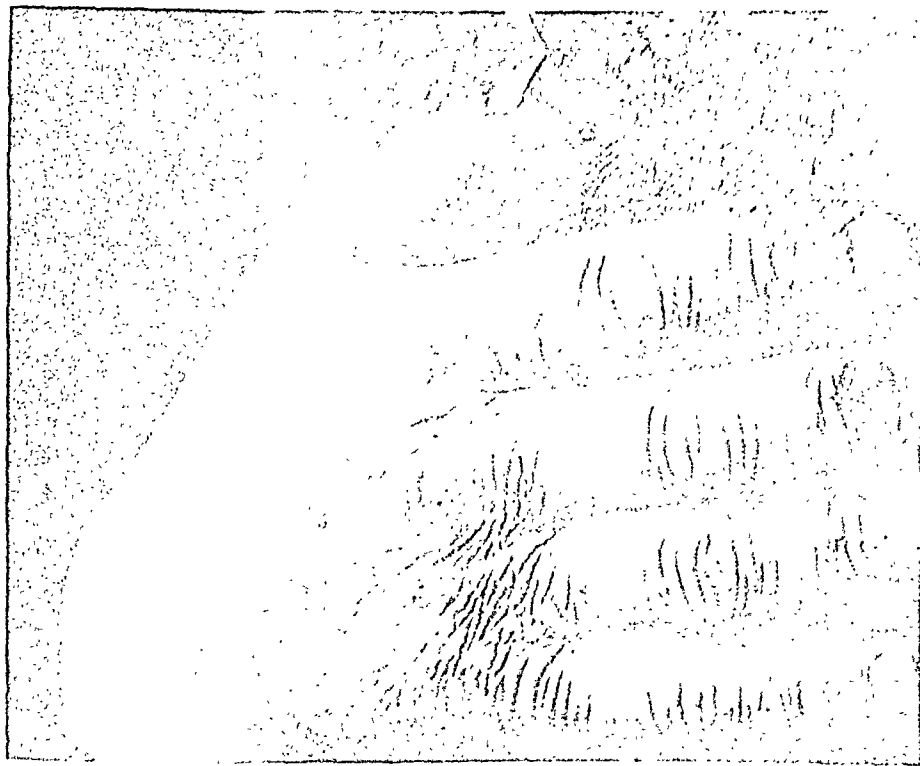


PLATE III, FIG. 2.

Photograph of hand of Mr. S. (Case IV.)

Figs. 1 and 2, show the present condition of his face, hands, and back of head. Plate II., Fig. 1, is from a photograph taken when he was about twenty years old, when the disease was commencing. Abdomen is distended, and rather pendulous, otherwise abdominal and thoracic examination is negative. He passes a large amount of urine which contains a trace of albumen but no casts. An examination of the blood shows 3,004,000 corpuscles in a cubic millimetre; the form of the corpuscles and the ratio of the red to the white not being materially altered. Pulse slow. Fig. 13 is a sphygmographic tracing of the pulse. All the patient's movements are sluggish and weak. No disturbance of tactile, painful, nor thermic sensibility. Plantar reflex absent or greatly diminished. Knee-jerk faint. An examination of the eyes by Dr. Merrill shows vision: Right $\frac{20}{L}$, Left $\frac{20}{XL}$, not improved by glasses in either case. The ophthalmoscopic examination was entirely negative. The fields of vision showed a slight concentric limitation.

FIG. 13.



ELECTRICAL EXAMINATION.—Indifferent pole on nape of neck.

Faradic current.	Left.	Right.
Facial nerve trunk.	Tube fully in.	Tube withdrawn $1\frac{1}{2}$ inches.
Frontal muscle.	Tube withdrawn $1\frac{1}{2}$ inches.	" " $1\frac{1}{2}$ "
Zygomatic muscle.	" " $\frac{3}{4}$ inch	" " $1\frac{3}{8}$ "
Galvanic current [Milliampères]. (Hirschberg galvanometer). ¹		
	Left.	Right.
Facial nerve trunk.	KaS 2 AnS 3 AnO absent.	KaS 2 AnS $3\frac{1}{2}$ AnO absent.
Frontal muscle.	KaS 1 AnS $2\frac{3}{4}$ AnO "	KaS $1\frac{3}{4}$ AnS $2\frac{1}{4}$ AnO "
Zygomatic muscle.	KaS 2 AnS 3 AnO "	KaS $2\frac{1}{2}$ AnS $3\frac{1}{2}$ AnO "

April 1. Patient took nitroglycerine, gr. $\frac{1}{50}$ th t. i. d., for a long time without any benefit, and then Fellows's compound syrup of the hypophosphites, with no better success. A single dose of pilocarpine, gr. $\frac{1}{50}$ th, caused obstinate vomiting and great prostration, without producing any sweating.

March 25, 1888. He has not changed materially during the past year, although he feels better, and the skin of the legs and feet is less swollen and scaly than it was. He has been somewhat less troubled by bloody saliva, but lately he has had frequent and severe nasal hemorrhages. Three years ago he had repeated discharges of bloody urine. Is very dizzy, and is so weak that he cannot go up stairs without the aid of his hands. There is no impairment of tactile or painful sensibility. No retardation of conduction of sensory impulses. Plantar reflex and knee-jerk normal. Gums extremely swollen and spongy and bleed easily. Teeth are badly formed and loose, and occasionally one falls out. He says that the teeth get loose and then get tight again. Temperature in rectum 98.2° ; in mouth 97.7° ; in right axilla 97.2° ; in left axilla 96.8° (same thermometer). A surface thermometer held with moderate pressure on forehead registered 94° , but the reading varied with the pressure from 92° to 98° . Urine, sp. gr. 1020, clear

¹ See foot-note to Case III.

yellow, contains one-eighth per cent. of albumen, no sugar. Sediment contained no casts, but a large number of red blood globules. His nose continues to run a great deal; whenever he bends his head forward drop after drop of clear fluid falls slowly from the nose.

An elder sister of Mr. S., twenty-nine years old, has apparently recovered from a mild attack of myxœdema. She says that her skin has always been rough, especially across the small of her back and on the inner side of her thighs and legs. At times her face is swollen, especially under her eyes. She does not mind the cold weather, but dreads the hot weather, because she becomes so hot and flushed. She does not perspire even in summer, unless she works hard, and when she perspires her skin is softer. Two years ago she had an attack of jaundice, lasting four or five months, and was confined to her bed most of that time, and her hair fell out freely, and her teeth became loose. Since that time her skin has been decidedly less rough. She frequently has a tired feeling come over her, which compels her to lie down. She cannot work in a factory because she gets so hot and flushed. She has never had a goitre nor has any member of her family. She used to have, as a girl, frequent and severe epistaxis, and she has always been unwell very freely, much more than she thinks is natural. Her memory is good. She has vivid dreams. She has a good crop of hair except in axillæ, where she never had hair. Her teeth are not decayed. Her voice is not hoarse. Temperature in mouth at 8 P.M. 99.2°. Her appearance is not abnormal, except for some thickness of the lips and puffiness about the eyes, and a slight scaliness of the skin, especially on inner side of thighs. She says that she is very much better than she was, and she attributes her improvement to daily warm baths and excessive friction of the skin, which she has used with great energy for several years.

A younger sister of Mr. S., twenty years old, seems to be in the early stages of a mild form of myxœdema. Her face has always been swollen and her skin is thick and scaly. Hair of head has always been thin, and has not grown much until recently. There is no hair in axillæ, but the hair on the pubes is well developed. Her nails are not brittle but are not well formed. No trouble with her teeth. She always has been badly affected by the hot weather, she becomes hot and flushed and perspires only slightly. During the past winter she was much troubled by chilblains on her feet, and her hands were deeply chapped and fissured, although she went out very little. Her voice is clear. She feels weak and languid. She has neither epistaxis nor menorrhagia. Pulse 80, small; temperature at 8 P.M. 100°; urine sp. gr. 1005, trace of albumen, the sediment contains no casts, but much vesical epithelium. She complains especially of flushing and burning of face, which looks flushed and swollen.

CONTRIBUTION TO THE DIAGNOSIS AND SURGICAL TREATMENT OF TUMORS OF THE CEREBRUM.

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I.

THE case which forms the basis of this contribution to a novel field of surgical progress, presents many points of interest in relation to diagnosis, and illustrates the possibility of the removal of a deeply placed tumor, and the prolongation of life through operation. The medical and surgical remarks upon the subject which the case illustrates are separately made by the authors.

HISTORY OF THE CASE. [BY DR. SEGUIN.]

Mr. B., æt. thirty-nine, married, German, brewer, residing in Bridgeport, Conn.; attending physician Dr. Charles C. Godfrey.¹ Was first seen during my absence by Dr. J. Arthur Booth on August 12, 1887. The following is a transcript of the notes then taken:

Is a strong-looking German. Has been married ten years; has four healthy children. Wife has had no miscarriages. There is no history of gonorrhœa, or chancre, or of any syphilitic symptom. Has been in the habit of drinking beer, but no strong drink. Has smoked moderately. Is right-handed. No epileptic attacks in childhood. Was perfectly healthy until the autumn of 1882. He then had malarial fever, apparently of mixed remittent and intermittent forms. During this illness he had a good deal of pain in the head, and one day, feeling strangely, he got up to go to the window, when his wife observed a spasm of the right cheek and neck (head and face turned to the right). This was a twitching spasm, and did not involve the arm; consciousness was not lost. A similar attack occurred a year later, and during the third year he had an occasional attack in the night. She is positive that until 1885 there were no spasmodic movements in the hand or arm. He was otherwise well, with the exception of an occasional headache, until two years ago, when one day he fell unconscious and bit his tongue. He has had similar attacks at long intervals since; they lasted only a few seconds and left him very weak. These epileptic attacks were preceded by an aura consisting of a "frightened feeling," followed by twitching or jerking in the right hand and arm and in the right side of the face, followed by loss of consciousness.

The attacks have occurred at all hours, and no exciting cause has been observed. Has taken bromide of potassium lately, and has had

¹ The authors of this paper desire to express their obligation to Dr. Godfrey for his hearty coöperation in the management of this case, and for his skilful treatment of it during the long period in which it was under his individual care.

fewer attacks. Memory not as good as formerly, and speech has become "thick" (bromide effect?). General health has remained good.

Examination.—Stands well with eyes closed. No tremor of tongue or fingers. Tongue deviates slightly to the right. Vision is good; never diplopia. The right hand is weak; dynamometer showing R. 30° and 32°; L. 35° and 32°. No ataxia. Patellar reflex normal. (State of facial muscles not noted.)

Treatment.—To stop beer entirely; to take twenty grains of bromide of sodium morning and noon, and forty grains at bedtime.

August 26. Dr. Seguin's notes. Patient now states that the first epileptiform attack was five years ago. A long interval follows, as above noted. Again denies, in most positive terms, the occurrence of chancre or any syphilitic symptom. No injury to head. Attacks always begin in the right facial muscles; speech is almost wholly suspended, even when consciousness is fully preserved. Can call out "water" or "ices," but cannot talk. He has had no motor attacks in the hand alone. Patient is not aware of weakness of the right hand and arm, but admits that he is awkward with this member, and that his handwriting has become bad. In the last eight or nine months the right upper extremity has felt heavy or "numb." Speech is said to have been thick and slow for over two years. Memory much impaired.

Examination.—Pupils equal, of medium size and active; muscles all act well (no prism-test). The optic nerves and retinal vessels appear perfectly normal. The lower facial muscles on the right side are distinctly paretic, and there is slight deviation of the tongue to the right. Can close left eye alone, but not right; frontalis normal. The right arm is paretic; grasp, R. 32° and 30°; L. 33° and 35°. Stands equally well on either foot; the walk is normal. Patellar reflex slightly greater on the right side. Sensibility is unimpaired, except a very slight diminution of tactile sensibility, as tested by æsthesiometer, on the right cheek. Mental action slow but accurate.

Recent attacks: about June 10th or 12th, August 11th, 16th, and 18th. Intermittent fever has reappeared; a chill followed by high fever on August 21st, 23d, and 25th.

Symptomatic diagnosis.—Right-sided Jacksonian epilepsy, with facio-brachial paresis.

Anatomical diagnosis.—Tumor of the left motor zone in the facial centre.

Treatment.—Ordered a mixture containing to each dose, Fowler's solution, 5 minims; bromide of potassium, 20 grains; iodide of potassium, 15 grains; fluid ext. of rhamnus frang., ʒss, on rising, after midday meal, and at bedtime. For tertian fever, to take sulphate of quinine 20 grains to-night, and 10 grains every night afterward.

September 21. Comes with Dr. Godfrey. Has had only one severe epileptic attack since last call, viz., on August 31st. On September 17th, had a slight localized attack in the right cheek. Speech is worse; slow and somewhat interrupted, though not, strictly speaking, syllabic. The patient himself has noticed the aggravation, and adds that he can't always think of the right word to speak. On September 13th, had a chill followed by fever. During this attack he had severe pain in the left side of the head. No constant headache; no vertigo. Complains of a constant feeling of numbness, or a numb-weight in the whole of right upper

extremity, but not in cheek, tongue, chest, or leg. Has been somewhat drowsy in daytime.

Examination.—Pupils and optic nerves are normal, right facial muscles as before. Tongue tremulous, but nearly straight. Paresis of right arm more pronounced: grasp, R. 36° , 37° , 37° ; L. 40° , 37° , 39° . Stands less well on right foot (eyes closed). Patellar reflex is greater on right side.

Sensibility. No anæsthesia of face. On pulps of left fingers the points of the æsthesiometer are distinguished at from 2 to 3 mm., on the right at from 3 to 5 mm. This slight tactile anæsthesia is most marked on thumb and index. Feels texture of cloth as well with right as with left fingers. The muscular sense, as tested by passive movements and weights, when eyes are closed, is normal.

The desirability and feasibility of an operation in the near future, if symptoms increase, are discussed with Dr. Godfrey. I feel reasonably certain that the lesion is a tumor affecting the motor apparatus of the left hemisphere, in the parts associated with the face and hand. Whether the tumor is cortical or subcortical is open to doubt. The local twitching, or clonic spasm being in favor of a cortical lesion, while the absence of (constant) headache would strongly point to a medullary lesion.

October 19. Has had several seizures. One (on September 23d), beginning as usual in the right face, became a complete epileptic attack with biting of the tongue. States that frequently after attacks the right cheek is flushed and hotter than the left. Has had more severe and more constant pain in the left parietal region. The hemi-paresis is worse; saliva flows almost constantly from angle of mouth; the right cheek and buccal muscles are almost powerless; the tongue deviates very slightly to right (not at all in proportion to the facial paralysis); the anæsthesia, though very slight, is demonstrable on right face and hand; to coarse tests the muscular sense is normal in upper extremity. Percussion develops tenderness over an oval area $2\frac{1}{2} \times 2$ inches above the left ear, and overlying the motor zone. I advise an operation, exploratory at least, as soon as the patient can be induced to submit to it.

November 15. Mr. B. comes to New York expressly to have the operation performed. Since last date, a thorough trial of iodide of potassium, to 200 grains three times a day (four days at that dose), has been made, without good or bad effects. The bromide has been continued at an average dose of sixty grains *per diem*, but several partial attacks have occurred.

A careful physical examination reveals substantially the same symptoms, viz., paralysis of right lower facial muscles, paresis of right arm (grasp: R. 23° ; L. 40°); leg apparently normal; constant drooling from right side of mouth; slight aphasic and agraphic faults. Anæsthesia as before, tactile, and very slight; muscular sense preserved. No symptoms in optic apparatus. The greatest tenderness to percussion, coinciding with seat of greatest constant pain, is in a spot just in front of the auriculo-bregmatic line, and from 8 to 10 centimetres (3 to 4 inches) above the external auditory meatus.¹ The patient was

¹ This area of tenderness was marked at the time upon a cranial diagram, and subsequent comparison of this sketch with that represented by Fig. 1, and with the estimated actual location of the tumor at the time of operation, was made.

sent to Dr. R. F. Weir to be examined by him with a view to operation, and was admitted the same day to the New York Hospital as a private patient in his service.

On the same day careful measurements of the cranial temperature were made upon the shaven scalp. The instruments used were four of a set of Seguin's surface thermometers, self-registering, made expressly for me by Casella, of London, in 1883. These thermometers were not graduated until four months after making, and Mr. Casella guaranteed their accuracy. Just before using them to-day, I tested the entire set of twenty instruments, comparatively, in water at about the normal temperature of the body, and found that most of them agreed to $\frac{1}{16}^{\circ}$ C., and the others (with one exception) within $\frac{1}{8}^{\circ}$ C. Four of the most accurate were used upon the patient; each instrument being held firmly upon the scalp (with enough force to leave an indentation) for five minutes. The results were recorded by an assistant, while Dr. Gordon, the House Surgeon, and myself managed the instruments. The following is the tabulated result in Fahrenheit degrees.

	Right side.	Left side.
Frontal regions	93.2°	94.3°
Temporal regions	98.0°	96.0°
Vertex one inch from median line	96.8°	95.0°
Occipital region	94.1°	97.2°
Over supposed site of tumor	96.3°	97.7°

Nov. 17. The measurements were taken again in the same manner. Temperature of room 78.5°. Axillary temperature of patient 97.7° (hospital thermometer).

	Right side.	Left side.
Frontal regions	95.0°	96.4°
Temporal regions	97.2°	96.8°
Vertex one inch from median line	96.4°	96.4°
Occipital region	96.4°	97.2°
Just above edge of ears	97.7°	98.0°
Half way up Rolandic line	96.8°	96.4°
Over supposed seat of tumor	96.1+°	96.1°

The averages of these measurements for the two sides of the cranium were:

	Right.	Left.
First series	95.7°	96.0°
Second series	96.5°	96.75°
	<u>96.1°</u>	<u>96.37°</u>

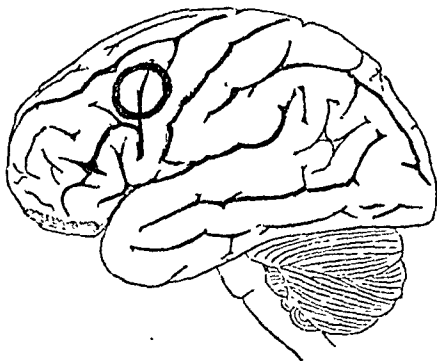
The temperature over the supposed seat of the tumor was 1.4° higher on the left side the first day, but on the second day no differences of any moment were noted.

For the whole head these averages were almost in accord with those of Maragliano and Seppilli (96.98°), and higher than those of Gray (95.5°). As the averages of Gray represent more nearly the normal in our climate and in our inhabitants, we must conclude that in the case of Mr. B. there was a general elevation of cranial temperature amounting to about 0.7°.

These thermometrical results appear specifically worthless; yet the absence of positive elevation of temperature over the supposed site of the tumor might be added to other indications to be referred to later, and which led us to be prepared for a subcortical lesion.

Final diagnosis.—It is almost certain that Mr. B. has a cerebral tumor involving the centre for the face and partly that for the arm in the left hemisphere. On account of the late appearance of headache, and the absence of marked elevation of temperature over the seat of the tumor, we must not be unprepared to find a subcortical tumor. Nature of tumor uncertain, probably a sarcoma. The appended figure is a reduction of an Ecker diagram with the probable site of the tumor marked by a heavy ring, drawn before the operation, which was done

FIG. 1.



Outline diagram of left hemisphere. The dark ring represents the site of the tumor, estimated before the operation.

by Dr. Weir on November 17th. The tumor was found, deep under the surface of the brain, in the indicated location. Although, surgically speaking, it was a subcortical tumor, yet it probably invaded the cortical gray matter deep in the sulcus between the gyri (*vide* Figs. 3 and 4).

THE OPERATION. [BY DR. WEIR.]

The operation was performed with the assistance of Drs. Seguin and Bull, under ether and with antiseptic precautions, spray included, Nov. 17, 1887. The patient's head, shaved the previous day, had been for twenty-four hours covered with gauze moistened with 1 to 60 carbolic acid, after a thorough scouring with whale-oil soap and water. The auriculo-bregmatic line was marked out by Dr. Seguin on the scalp, and at a point a little in front of this line and just anterior to the lower half of the fissure of Rolando a minute perforation was made through the scalp and through this a mark made with a sharp pencil to indicate on the skull, when exposed, the place to be centred by the trephine. An oval flap of the scalp, three inches broad and including the periosteum, was then raised from the skull in such a way that its base was toward the frontal region. This was held back by a suture at its apex to the eyebrow, and the many arterial and venous bleeding points secured by clamps. The first button of bone with a one inch trephine was removed about one and a half inches above and a little in front of the left ear. A second button of a similar size was taken away just in

front of this and a little above it. The intervening portions of bone were rapidly gnawed away with a double gouge forceps, and the cranial opening enlarged on all sides in the same way until it reached an area of three by two inches.

The dura mater bulged only slightly but pulsed freely, and presented a normal appearance. It was opened by lifting a part with a tenaculum and by first penetrating it with a knife, and then cutting it with curved blunt scissors a quarter of an inch from the skull edge for about three-quarters of the circumference of the hole, leaving the attached part uppermost. This flap was then reflected (Fig. 2). One of

FIG. 2.

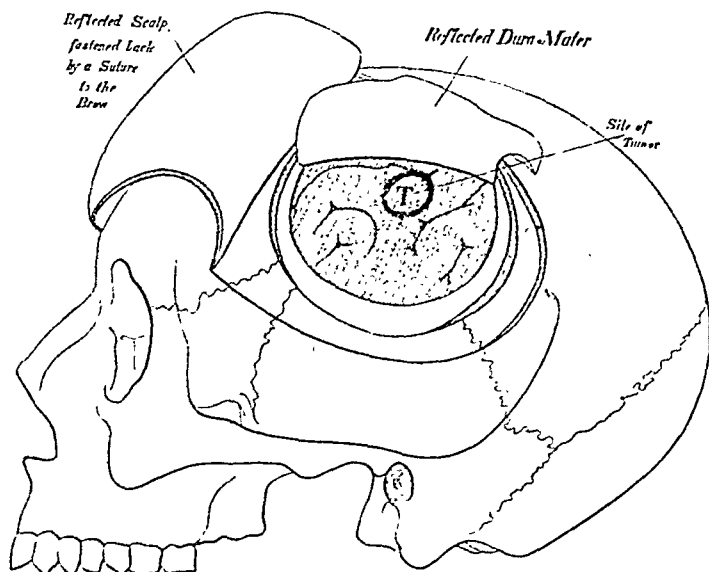


Diagram showing lines of incision and location of tumor.

the vessels of the pia was wounded in the procedure and was ligated after some little difficulty. The middle meningeal vessels crossing over the dura were secured, partly before the incision in this membrane, by a curved needle carrying catgut through the dura, an expedient taught me by my venerated preceptor Dr. Gurdon Buck, or by tying the vessels as they were cut. Two branches at the lower part of the wound were, however, only controlled by small sponges at first, and subsequently by iodoform gauze pressed between the dura and the skull.

As the brain itself was exposed it was noticed to bulge decidedly into the opening, but its pulsations were manifest. Nothing abnormal was seen on the exposed surface, though by some it was supposed the convolution situated most posteriorly was violet in color. This was thought, however, by me, to be due to the recent extravasation (alluded to above) from the damaged pia vessel. The finger recognized no tumor or abnormality. Quite firm but gradual pressure, sufficient to permit the finger to be carried below the skull level and slightly beyond the area of the bone opening, furthermore revealed nothing. It began to appear

as if the growth was beyond the reach of surgical art, when firm pressure posteriorly encountered a deep resistance of a hard mass of small size underneath the previously suspected convolution. The convolution was gently parted with the finger-nail and a director, and at a depth of nearly an inch, directly inward and in probable close proximity to the upper part of the ventricle a mass was exposed to the touch, and subsequently indefinitely to sight by means of gently used retractors, made of bent spoon handles. It was then ascertained to be a growth nearly the size of a large almond, or, more correctly, in shape and size as large as the end of the forefinger, not encapsulated and seemingly infiltrated into the brain tissue. It was, after a brief trial to remove it with a director, lifted out readily with a Volkmann's spoon one-half inch in diameter, which had been previously blunted for the purpose.

After the tumor had been taken away a separate hard piece the size of a pea was recognized and also removed. The finger could now be passed to the depth of fully an inch and a half, and it gave me the impression of being in a smooth cavity. No hemorrhage from the brain itself occurred. The normal condition of the brain having been corroborated by Dr. Seguin's digital examination, a rubber drainage tube was carried to the bottom of the cavity and out through the posterior margin of the wound. The dura mater was stitched together except over a small area where the tube emerged, and after a final washing of the wound with a 1 : 5000 sublimate solution had been done.

FIG. 3.

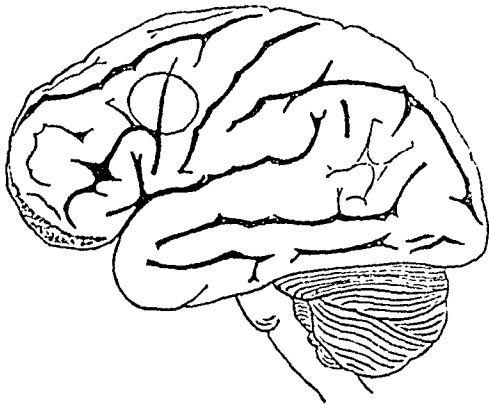


FIG. 4.



Fig. 3.—Outline diagram of left hemisphere, with ring showing topography of tumor.

Fig. 4.—Diagram of oblique transection passing through tumor (Pitres's *coupe frontale*), showing the actual location of the tumor as determined by the operation.

The disks of bone and a number of the bone fragments which had been chipped off by the rongeur were replaced over the sewn dura. These disks and pieces of bone had been kept in a towel wet with 1 to 60 carbolic acid, and kept at a suitable temperature by immersing the jar containing them in warm water for over an hour. Two strands of horse-hair and one of catgut were placed under the replaced scalp for drainage, and a fresh piece of iodoform gauze tucked between the skull and dura mater at its lower part where the meningeal oozing was still troublesome, and after suturing the scalp with catgut, a sublimate dressing dusted

with iodoform, was applied with moderate pressure. At the termination of the operation pulse 125. General condition good.

The tumor lay entirely within the white substance and was situated, in the judgment of Dr. Seguin, at a depth of three-quarters to one inch below the posterior edge of the second frontal and the anterior edge of the precentral gyri; that is, approximately in the fasciculus for the face. This location in a transverse projection corresponds to Bitot's section No. 3, and is a little behind Pitres's pediculo-frontal section. The location of the tumor in depth is approximately represented by Fig. 4, made from an oblique transection, corresponding with the frontal section of Pitres.

Pathologist's Report.—The microscopical examination of the tumor, made by Dr. Peabody, pathologist to the hospital, was as follows:

Sections of the tumor show it to be made up chiefly of round and oval cells, with a rather abundant stroma of finely fibrillated connective tissue. These cells vary in size from that of white blood cells to that of three to four times their size. The superficial parts of the growth contain numerous large bloodvessels with very thin walls. There is no perivascularitis. On one side of the tumor there is a thin layer of white matter (visible to the unaided eye) which is distinctly fibrillated, with cells like those of the tumor itself. No glioma cells can be obtained by appropriate treatment. Diagnosis—Sarcoma.

During the operation there was more hemorrhage from the divided scalp vessels than in my opinion should be hereafter allowed. Clamps and ligatures hold poorly in the tough tissues of the scalp, and it is believed that the use of acupressure needles, at least during the operation, would answer better. The operation lasted about one and three-quarters hours, and was prolonged by the difficulties in controlling the hemorrhage from the scalp, dura, and pia mater.

Three or four hours later, when the patient had come out of the ether, it was noticed that he moved his right leg well, and his arm as before. He was slightly aphasic, and his facial paralysis was somewhat more marked. At 10 P.M. Temp. 99°; resp. 24; pulse 132. Given sod. brom. grs. xv. At 11.30 P.M. ordered peptonized milk, 5j; brandy, 3j, q. 2 h.

18th. Given hypodermatic of Magendie, m iij, at 1.30 A.M. Catheterized at 2.45, 10 ounces of urine drawn. Was very restless during the night. Vomited slightly at 8 A.M. Temp. 102°; resp. 24; pulse 124. Hypodermatic of antipyrin, grs. v, at 11 P.M.; to be repeated every three hours as long as the temperature keeps above 100°. Given milk and lime-water, 5ij, q. 2 h.

19th. Vomited three times during the morning. Temp., A.M., 100°; resp. 22; pulse 112. Catheterized at 9 A.M. Milk continued as on yesterday. Is fully conscious of everything going on around him. Aphasia more marked than before the operation. Facial paralysis about the same as before operation.

20th. Temp. 99°; pulse 90. The dressings were changed to-day, and as the rubber drain contained clots, suggesting the fact that it did not drain well, it was removed. The one and a half inch thick dressing was pretty well soaked with dried bloody discharge. The horsehair drains were also withdrawn, and only the catgut drain left in. The iodoform tampon was also removed. The scalp was found blistered, owing to irri-

tant effect of the too damp bichloride compresses. This accounted, I think, for the temperature in part at least. Carbolic spray used while dressing was done. Dry sublimate and iodoform dressings applied. Decided improvement in patient this morning; aphasia not nearly so marked.

21st. This morning the temperature was 99.8° , resp. 20, pulse 90. From this date the patient progressed steadily. A second dressing was made on the 27th inst., ten days after the operation, when the whole wound was found healed, save a small spot where the drainage tube had merged. The replaced bone appeared firm. The patient's aphasia had nearly disappeared by this time, and his appreciation of a joke was quite keen. By December 4th he was out of bed, sitting up. The scalp was firmly united, the replaced bone disks solid, and the cranial gap entirely occluded with bone, except at its lower part, where the fragments had been dislodged by the emergence and withdrawal of the iodoform tampon.

SUBSEQUENT HISTORY. [By Dr. SEGUIN.]

The operation was followed by temporary complete paralysis of the right limbs, and nearly complete aphasia. So marked was the last symptom that, for a few hours, we feared that the third frontal gyrus had been injured, but this fear proved groundless. From the day of operation until November 24th, fifteen grains of bromide of sodium were given at bedtime. On November 24th this dose was increased to thirty grains. By a misunderstanding, no bromide was given from November 27th to December 3d, when he was ordered $\mathcal{R}.$, Sodii bromidi, \mathfrak{zjss} ; syr. aurant. cort. \mathfrak{zjss} ; aqua, ad \mathfrak{zvj} ; one teaspoonful (equal to seventeen grains of bromide) three times a day.

I examined the patient at the New York Hospital on December 8th, twenty-one days after the operation. He was in bed, calm, clear-minded, and in good general condition. No convulsions had occurred. The upper facial muscles act equally well on both sides, except that the left eye cannot be closed independently of the right. In repose, the lower part of the face appears nearly normal. The right lips are weaker and less expressive than the left, the right naso-labial crease has reappeared, and is nearly equal to the left. In speaking or showing teeth, or forming lips to make o sound, the inactivity of the right lips becomes evident. The tongue protrudes almost perfectly straight, going a trifle to the right. In smiling, both sides of the face act equally well. There is no drooling. The left pupil is a trifle larger than the right; both active. Optic nerves and retinal vessels normal.

Upper extremities.—No tremor in extension. The small muscles of the right hand still show some atrophy, though, perhaps, less than at last note. Grasp on dynamometer: right, 22° and 25° ; left, 30° and 30° . Coördination is practically perfect. Unbuttoning and buttoning shirt with right fingers alone, is successfully done, though slowly, and a little awkwardly. All voluntary movements are well and quickly made with right foot, coördination (heel-on-patella test) normal. Thoracic and abdominal muscles act well. Circumference of right calf 32 centimetres ($12\frac{1}{2}$ inches), of left 31 centimetres (12 inches). No wrist reflex. Knee-jerk high, but equal on two sides. The same is true of the plantar reflex.

Sensibility.—On the face a light touch with finger is equally well felt

on both sides, except that on the lips sensation is, perhaps, more acute on the left side. The points of the æsthesiometer are distinguished on the left cheek and chin at 10 mm., on the right side at from 10 to 15 mm. The greatest difference exists on the upper lip, above moustache. On red surface of lips points are separately recognized as follows: left upper lip, 6 to 8 mm.; right upper lip, 10 to 18 mm. Left lower lip at 4 mm.; right lower lip, 8 to 10 mm. On the tongue, average on the left side, 3 mm.; on the right side, 4 to 5 mm. The patient claims to taste his food properly on both sides of the tongue. Pricking is equally felt on both sides of the face.

Upper extremity.—To light contact there is slight dulness of sensibility on the right hand and forearm, but impressions are correctly localized. Æsthesiometer points are distinguished at between 3 and 4 mm. on pulps of fingers of both hands; a little closer on the left side. Pricking is more acutely felt on the left fingers, hand, and forearm, than on the right. Appreciates heat and cold quickly on right hand. Muscular sense tested with eyes closed. Can maintain right arm in extended position several minutes. Passive movements are quickly and correctly appreciated. Distinguishes small differences in weight in right hand, and recognizes that two silver half dollars, laid one after the other on the right palm are of the same weight. Sensibility of feet and legs normal. Speech is slightly thick, and patient occasionally hesitates for the word; cannot utter it quickly.

Dec. 10. At about 10 A. M. had a convulsive attack. He rang for the nurse, and told her a fit was coming on. She reports that his face was then twitching on the right side, about the nose and beneath the eye; the right forearm was convulsed. Then he became unconscious, and had a general convulsion, the movements being more marked on the right side. Both pupils were dilated and equal; there was internal strabismus of the left eye, and the head was turned to the left. The convulsion lasted about one and a half minutes, and there was a short subsequent coma; pulse 120, but no rise of temperature.

11th. Seems as well as before attack, except some mental depression.

16th. Allowed to walk a little. At 8.15 P. M. had another convulsion.

17th. One month after operation is allowed to go home, in good general condition, and unquestionably better as regards paresis of face and hand.

On the 21st Dr. Godfrey had the kindness to send me the following report: "Mr. B. arrived at 12.45 P. M. I saw him at 1.30 P. M., and found him feeling very comfortable after his journey. Pulse 72; temp. 98.4°; resp. 17. I ordered for him the medicine as you directed (this was a solution the dose of which consisted of Fowler's solution, $\text{m} \cdot \text{v}$; iodide of potassium, 15 grains; bromide of potassium, 22 grains; water, $\text{z} \cdot \text{ij}$; to be taken, largely diluted, on waking, after dinner, and after supper). I have ordered him to be kept very quiet for a time, and his wife carries out this instruction very well. He had a slight attack of epileptiform convulsion yesterday, but it was very quickly controlled by the amyl nitrite. His wife says that since returning home he has been more quiet, and his mind more at ease than when in the hospital. *The amount of power exhibited in his right hand and arm is a complete surprise to me, and his speech is better than I have known it in a long time.*"

On Jan. 23, 1888, Mr. B. came to New York to see Dr. Weir and me at my office. He walked in as erect and active as any one, and passed through a trying examination fairly well. Mental action is good, speech

a little slow, but not aphasic (seldom pauses for the word). Has had no marked attack in two weeks; only an occasional twitching of the facial muscles. Has also had a few vertiginous or faint feelings.

The pupils are equal and normal. The upper facial muscles (naturally weak) act fairly well on both sides, less on right. The mouth shows some deviation to the left in repose. In showing teeth, paresis of right cheek and lips becomes evident. In laughing both sides act equally. There is no drooling. On the whole, the face is rather expressionless, somewhat like that of paralysis agitans. The right upper extremity is paretic; grasp, R. 26° and 26° ; L. 35° and 33° . Movements of lower extremity normal.

Sensibility.—To light touch of end of pencil there is no difference between the two sides of the forehead, ears, and neck. On the rest of the face there is a distinct dulness of perception on the right side. The æsthesiometer test shows no difference on the forehead. On the cheeks, around mouth, and on chin, the points are distinguished at greater intervals on the right side; a difference of 50 and 75 per cent. in places. Light touch is less well felt on the right than on the left hand, and the dulness is most marked on the ends of the thumbs and fingers; dorsum and palm equally sensitive. The æsthesiometer, however, reveals no anæsthesia. Sensibility to passive movements and judgments of weight (loaded rubber balls) unimpaired. On February 29th Dr. Godfrey wrote at length about the patient's condition; the following being essential points. No attacks of any sort occurred from Jan. 9th to Feb. 25th (forty-five days), when, after a chill in the night, he had a spasm "mostly limited to the right side," at 8 A. M., followed by paresis of the hand. Since, symptoms of severe remittent fever (pyrexia, jaundice, pain and tenderness over liver, occasional chills) have been present, and have been treated with quinine and calomel, the bromide being continued.

March 8. I went to Bridgeport and examined Mr. B. with Dr. Godfrey. The actual objective symptoms of cerebral disease are as at last note, but the patient is generally very feeble, shows some jaundice, and a little fever. There is much more aphasia than at any time; so much as to render tests of sensibility unreliable. I am of the opinion that this is temporary, and only dependent upon asthenia. From 40 to 60 grains of bromide of sodium to be given, besides the necessary general treatment.

March 19. During an exacerbation of fever there occurred a convulsive attack in the right hand. A similar spasm on the 25th. On the 26th a seizure (well described by his wife) occurred, consisting of only a few clonic flexion movements of the right thumb.

April 3. I again visited the patient, and noted his condition as follows: Mr. B. is calm, clear-minded, and cheerful. Articulation is slightly defective, phonation normal, he occasionally hesitates for a word; in answer to questions, he states that he knows the word he wants, but cannot utter it. The jaundice has almost disappeared; the tongue is clean, appetite fair, axillary temperature 99° , pulse of good strength, about 90.

Examination.—Face in repose rather expressionless, which I think is normal. Right lower face less expressive than left. Pupils of medium size, active, the left a little larger. Vision not tested, and fundus not examined. In smiling and laughing (which the patient does heartily at a medical story) both sides of the face act well. The right eye cannot be voluntarily closed alone, whereas the left can. In volitional effort

almost complete inactivity of the right lower facial and buccal muscles. The tongue protrudes almost straight (a trifle to the right). All movements of upper extremities are well and quickly done. The grasp is: R. 11° and 11° ; left 21° and 25° . In extension the *left* fingers exhibit some tremor. The interossei of the right hand are somewhat atrophied. Movements of the leg not tested (patient in bed), but his wife states that he steps well with both legs.

Sensibility.—Face not tested. Declares most positively (to repeated questions) that the right hand no longer feels "numb." Feels the lightest touch on right fingers and hand, and with eyes closed he distinguishes consecutive contacts with coarse bed-cover, thin handkerchief, and a sheet of paper. *Æsthesiometer* points are differentiated at about three millimetres on left finger-tips, and at four on right finger-tips. Feels temperature equally well on both hands (and fingers). Muscular sense: with eyes closed, recognizes such objects as a key, a knife, and a piece of money placed in his right hand. A twenty-dollar gold piece being placed in it, he calls it a dollar; a half-dollar he calls a quarter, but he recognizes the difference between the weight of a half-dollar and that of a quarter-dollar. With rubber balls loaded to a difference of half an ounce up to four ounces, he recognizes differences quickly.

Mrs. B. states that since the return home convulsive movements have not appeared in the cheek.

FIG. 5.

When in the course
of human events it
becomes necessary for one
to attain the Independence
of a Nation it with
J. B. Edwards

Reproduction of Mr. B.'s writing April 4, 1888, showing agraphic as well as simple motor defects.
(The patient never wrote a very good hand, and was not a good speller.)

On April 4th Dr. Godfrey made some tests of the patient's ability to write. The few short attempts made caused great fatigue. By simple dictation next to no result was obtained. A copy of the opening paragraph of the Declaration of Independence was placed before the patient

and was partly copied, partly written by dictation, with the copy before him. The result, represented on page 36, shows faults due to the lack of strength and coördination, but also distinctly agraphic faults. There was no alexia.

It thus appears that nearly five months after the removal of Mr. B.'s cerebral tumor there is no very positive evidence of recurrence of the growth. The increased aphasia and agraphia may possibly indicate the invasion of more cerebral tissue by sarcomatous cells; but this is not so certain, because the aphasia has greatly diminished from March 8th, and it is impossible to determine how much the remaining debility, due to the remittent fever, may be responsible for symptoms now present.

It is greatly to be regretted that the normal course of the case should have been so obscured and modified by an intercurrent disease.

POST-SCRIPTUM.—*June 6th.* Mr. B. goes to Europe for a stay of two or three months. He comes to my office alone, and is himself attending to the details of the voyage. General health has greatly improved; is stout and florid. Attacks as follows, since last note: April 24th, slight clonic spasm in right hand; 28th, had a convulsion, beginning by local spasm in hand as usual, no biting of tongue; 30th, twitching of right thumb. May 14th, subjective spasm in right cheek and tongue, speech suspended for a few minutes; attack witnessed by wife, who says there was no visible spasm or impairment of consciousness; 26th, jerking of right thumb for a few moments. No return of fever; only occasional slight headache; all functions normal. Speech has varied in freedom from day to day.

Examination.—Apparently in perfect health; pulse 84. Speech a little slow, pauses for a word occasionally, but usually finds it. No headache to-day. Thinks that right hand has become weaker (which is an error), and states that a wooden or dead feeling (not formication) is present in fingers, most in medius, not in thumb, or palm, or in face. Drools occasionally from right buccal angle. Paresis of right lips and cheek, as at last note. The tongue is straight, but trembles and looks somewhat shrivelled, as in some cases of dementia paralytica. Grasp: right hand, 19½°, 20°, 22°; left hand, 33°, 25°, 28°. Coördination of hand perfect. Stands perfectly well with eyes open and closed, on one or both feet; walk normal. Patellar reflex normal, and equal on both sides; no wrist reflex. Sensibility is normal to touch, temperature normal, pricking on finger-tips and hands. Æsthesiometric limits on pulps of right fingers, 3 mm. Can distinguish differences in weight of only a few grains in right hand, and is fully conscious of all passive movements. Vision = $\frac{20}{xx}$; optic nerves normal.

Treatment.—On May 9th was given (in place of simple bromide solution) a solution of hydrate of chloral 7.50 gm., sodium bromide 37.50 gm., water 200 gm., each teaspoonful containing 3 grains of chloral and 12 grains of bromide of sodium. Dose, 2 teaspoonfuls on rising, 1 teaspoonful at midday, 1½ teaspoonfuls after evening meal; equal to about

4.5 gm., or 67 grains of the anti-epileptic salts per diem. Also, more or less regularly, a pill containing arsenious acid 0.001, podophyllin 0.004, ext. belladonna 0.015, quin. sulph. 0.20, after each meal. This treatment is to be continued faithfully while away. Is to avoid over-exertion, excitement, and exposure to great heat.

ON THE INFLUENCE OF BODILY MOVEMENTS OVER SEPTIC ABSORPTION.

BY J. BRAXTON HICKS, M.D. LOND., F.R.S., F.R.C.P.,

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GUY'S HOSPITAL; PAST PRESIDENT OF OBSTETRICAL AND HUNTERIAN SOCIETIES, ETC.

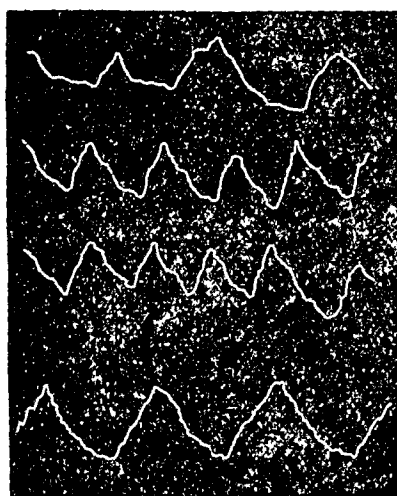
It is well known that the act of respiration is composed of four periods, namely, inspiration, expiration, and an interval between each, called pauses. Ordinarily, the duration of the pauses is much shorter than that of the other stages; and of the pauses, that between expiration and inspiration the shorter; and of the respiratory acts the inspiratory rather the shorter.

The inspiratory act increases the capacity of the thorax by increasing its diameter—most apparent at its base—and also by depressing the diaphragm, or, in other words, by obliterating, in a degree, its natural upward convexity. This alteration of shape is effected by its own muscular action, and by the stretching effect produced by the increased diameter of its circumferential attachments; normally, these movements are synchronous. When, then, by the act of inspiration the capacity of the chest is increased, a tendency to vacuum exists, which is corrected by two methods: 1st, by the ingress of air through the larynx; 2d, by the flow of blood through the various veins leading toward the heart; for, during inspiration, the normal support of these vessels, which exists during the pause preceding, is lessened, and thus the external air-pressure existing on the general vascular system immediately acts, and corrects the lessened tension by pressing the blood heartward. Thus, in the respiratory act we have a force of considerable influence supplementing the heart-action.

But there is another part of the body which it is also necessary to consider before we can fully apply these facts to the elucidation of our subject. When the diaphragm descends it presses on the contents of the abdomen, and these being more or less plastic, obeying the laws of elastic fluids, press correspondingly in all directions. And although the increased diameter of the base of the chest, to which the walls of

the abdomen are attached, would tend to increase the capacity of the abdomen at the upper part, and thus lessen the pressure within the abdomen, yet there is a marked residuum of pressure during each inspiration. This can readily be registered if we employ an apparatus similar to the cardiograph tied tightly to the abdomen, which may be called a gastrograph. The index will show a line wavelike as in the tracings (Fig. 1). The relative duration of inspiration, pause, expiration, and pause is well indicated.

FIG. 1.



Ordinary respiratory wave of the abdomen.

I have, hitherto, been speaking of normal respiration. If, however, a sudden inspiratory movement takes place, voluntary or otherwise, before the depression of the diaphragm can occur, then, instead of there being a residuum pressure in the abdomen, there is a tendency to a vacuum. Again, if, by voluntary effort, or by any restraint, the ribs are unable to rise—in other words, the base of the thorax cannot expand—then there is an increase of the pressure when the diaphragm descends; the usual condition resulting from tight-lacing, or the use of the belt.

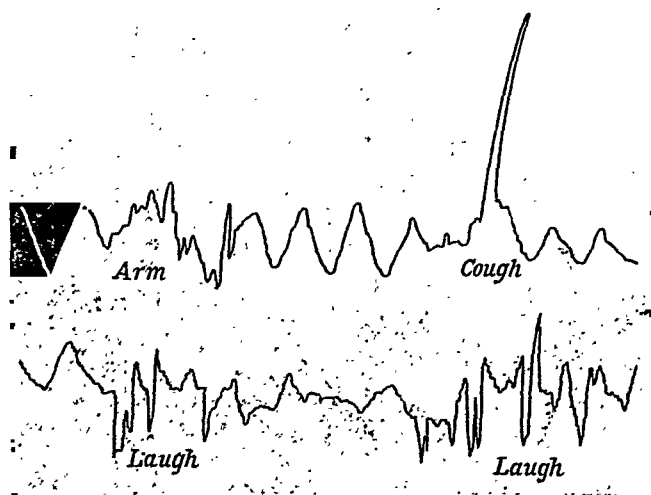
If the effect of sudden inspiration be to produce a vacuum within the abdomen, as it does within the thorax, then its importance, as a possible source of danger, must be self-evident to any one who has studied medicine.

No doubt the elasticity of the abdominal walls and their yielding nature materially minimize the effects of the thoracic vacuum, yet it can readily be shown that it is not completely reduced, and, under some conditions, scarcely at all.

Let me call the attention of the reader to the copies of tracings made under various conditions from the gastrograph.

In Fig. 2 will be perceived the effects of coughing, laughing, etc. The higher lines show temporary increase of pressure from within; while the lower indicate an increase from without; in other words, the

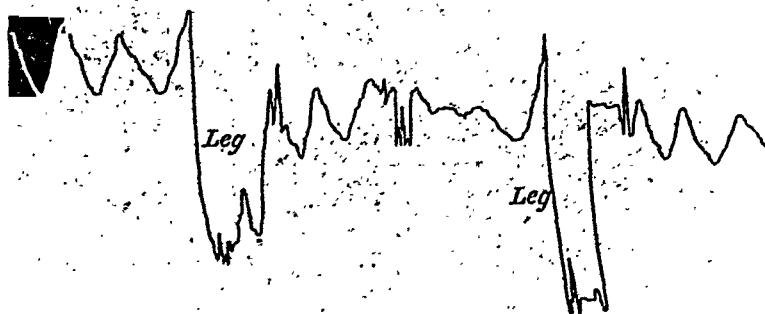
FIG. 2.



The effects of movements of the arm and of coughing and laughing on the respiratory wave of the abdomen.

tendency to vacuum. Referring, then, to Fig. 2, a rising and falling of the line will be noticed on the ordinary movements of the legs, arms, or trunk. This was from a person lying on his back. But the same effect,

FIG. 3.



The effect of movements of the legs upon the respiratory wave of the abdomen.

though in varying degrees, is found to follow all the movements of the body, the more markedly the more suddenly they are done, whether of the legs, arms, head, or trunk (Fig. 3). It is, doubtless, produced by

the sudden inspiration taken in order to fix the thorax preparatory to the action of the various muscles attached to its various parts, especially the abdominal muscles, which assist in fixing the thorax and consolidating the firmness of the trunk.

It has long been believed that there is a tendency, under certain conditions, to the existence of an insuck or indraw in connection with the inspiratory act, but I think I have now given demonstrable proof of the existence of a momentary excess of both pressure and vacuum within both chest and abdomen.

Let us for a few moments glance at the effect of such a vacuum.

For the reasons above given there is a corresponding sudden rush toward the chest in the veins principally; and doubtless also in the lymphatics; at the same time the outward current in the arteries would by the same force be checked. An opportunity would thus be given for the dislodgement of any clots which might have been formed in the veins. So also in the case of wounds a facility is given for any unhealthy material to be drawn into the current through the severed ends of veins or lymphatics, such as a portion of the plug, which might be purulent or ichorous. Doubtless in conditions of perfect health these accidents would generally be guarded against by the firmness of the plugs, and the absence of irritating matter, but in a wound in an unhealthy state, contrary conditions are present favoring the translation of portions of unhealthy plugs or of septic matter in a more fluid state. And if we admit the possibility of these things occurring, how much more are they likely to take place in the puerperal woman, or in other similar conditions, where every facility is given for the formation and increase of sepsis in consequence of the retention of sanious fluids at a high temperature scantily supplied with air; and where easy opportunity exists for its absorption through recently divided vessels of large calibre. Indeed, in practice I have, I think, had sufficient evidence to prove that vigorous movements of the puerperium have been important factors in initiating attacks of septic fever, and of renewing them during their subsidence. Unless I am much mistaken, the renewal of the attacks of rigors, fever, and sweating, has been produced by such movements. At any rate, I have known cases where these attacks have followed each time the patient had been much moved—I mean by getting out of bed, sitting up, or changing room. So much has this impressed me by frequent occurrence, that on seeing patients in consultation, with an account of renewals of shiverings, etc., I have made special inquiries, and found very frequently that these have followed those disturbances.

But if these conclusions are correct, another question will present itself to us. May we not, in manipulating the uterus freely charged with unhealthy fluids within, be favoring unwittingly septic infection, especially if the patient has been already under its influence? That this is

probable seems to be borne out by the fact that I have observed in many cases where I have been obliged, in consequence of hemorrhage or fever, to remove from the interior of the uterus retained portions of placenta and firm clots; indeed, I look forward to a slight increase of fever after these manipulations. The sudden removal of the hand after firmly pressing in the abdominal walls might, it appears to me, somewhat favor an indrawing.

There is another circumstance in the puerperal state which can also favor septic absorption from the inner surface of the uterus; namely, the sudden turning on the side from the back. At this time the walls of the abdomen are very often relaxed and flabby; so that when the patient rolls over on her side, the abdomen and uterus fall over in a marked degree if unsupported; and thus there is a tendency to a vacuum determining a flow toward the abdominal cavity. If any one doubts this tendency, he has only to place a woman with relaxed parts and flaccid abdominal walls in the knee-elbow posture and open the vulva with two fingers, and he will at once perceive that the inrush of air is very marked. We take advantage of this fact in our attempts to restore the retroflected pregnant or heavy uterus.

But the principle which underlies these facts does not belong only to the puerperium, but to all cases under like conditions in abdominal and gynecological surgery. It is not needful for me to indicate to surgeons the importance of the above considerations as bearing on the surgery of the chest, but I may be allowed to repeat that rapid movements, even of, apparently only, the legs, produce a quick result on the capacity of the chest.

It is difficult to gauge the practical importance of these considerations. As above remarked, the conservative forces of perfect health neutralize much of the effects of sharp movements, but in opposite states it appears to me that we should permit the patient to assist him or herself as little as possible in those conditions where the kind of injury facilitates septic absorption, or in cases of venous inflammation with plugging. The importance of this caution was sadly illustrated in the case of one who was my fellow-student. He was very athletic, and had, at the age of forty, from over-exercise, inflammation of one of the veins of his leg. He had lain quiet for some days, when, suddenly turning in bed, he felt that something had flown from his leg to his heart; he expressed a fear that he would be dead in a few days, which was the case. Symptoms of blocking of the pulmonary arteries soon came on.

Theoretically, I suppose, we may say that by mechanically checking or restraining the elevation of the ribs and abdomen by a bandage we, in a very considerable degree, lessen the risk attending rapid and sudden movements. But my object in this communication is rather to demon-

strate the effect of bodily movements, leaving it to your readers to improve upon my remarks.

There are other interesting points in connection with this subject, for an exposition of which I may refer the reader to the *Proceedings of the Medical Society of London*, 1883, "On the Tension in the Abdomen," and to "Notes," Royal Society's *Proceedings*, "On the Supplementary Forces Concerned in the Abdominal Circulation in Man," March 25, 1879.

I should add that where the abdomen is distended the effect of inspiration or bodily movements to produce a vacuum is necessarily lessened.

SIMPLE ULCER OF THE DUODENUM.

ROUND PERFORATING ULCER OF THE DUODENUM, WITH THE HISTORY OF A CASE.¹

BY W. W. JOHNSTON, M.D.,

OF WASHINGTON, D. C.

SIMPLE, round, or perforating ulcer of the duodenum is of the same nature as the round, perforating ulcer of the stomach, but while the pathological anatomy and symptomatology of gastric ulcer have long been fully known, duodenal ulcer has still an undetermined place in medical pathology.

Gastric ulcer was first anatomically described by Mathew Baillie in 1793, and the symptoms recognized by John Abercrombie in 1824, but to Cruveilhier is due the credit of having first given a full and accurate description of the disease in its anatomical and clinical details, in his great work published in 1830. In 1839 Rokitsansky made seventy-nine cases the basis for a very elaborate study of the disease, and since that date but few material additions have been made to our knowledge of the lesion and its symptoms.

Duodenal ulcer has a much more recent history; the first² undoubted example which I have been able to find, was reported in 1828 (Robert, *Bull. Soc. Anat. de Paris*, 1828, iii. p. 171); the description of the lesion in this case is strictly accurate. The patient, a youth, aged seventeen years, suffered for several months with vague pains in the epigastric region; after this he had nausea, loss of appetite, and general malaise. Perforation of the ulcer took place after a full meal, and death resulted from subacute peritonitis. At the origin of the duodenum, immediately below the pylorus, was an oval ulcer, three to four lines in diameter, the

¹ Read before the Medical Society of the District of Columbia.

² Teillais alluded to an observation of duodenal ulcer, in a thesis of 1824, but I have not been able to find it.

edges of which were smooth, rounded, having a punched-out appearance, and darkish gray in color. The bottom of the ulcer was formed of the peritoneal coat of the intestine, with a perforation, a line in diameter, in its centre. Near this ulcer was another involving the mucosa only.

Scattering observations were published in the following years, among which was one by John Abercrombie (*Edin. Med. and Surg. Journ.*, 1835, vol. 44, p. 278), to whom so much is due for the early knowledge of gastric ulcer. Klinger, of Würzburg, collected ten cases in 1861, and added three of his own; the disease was not recognized during life in twelve of the thirteen cases. In 1863 Trier published a number of cases and added twenty-six which he had seen in the hospitals in Copenhagen from 1842 to 1862. Krauss, in 1865, reviewed eighty cases, and in the same year Morot, in his graduation thesis (Paris), described and commented on twenty-two cases, which included several due to burns. Four years later, in 1869, Teillais, in his graduation thesis (Paris), gave a full review of the lesion and its symptoms as illustrated in sixteen carefully recorded cases. Chovostek, in 1880, made an addition of 63 new cases to 80 before reported, making 143 in all. Since this date a number of cases have been added to this list. In the *Index Catalogue of the Library of the Surgeon-General's Office*, 123 authors have reported one or more cases of simple ulcer (not including those due to burns and scalds); the earliest of these was in 1828, the latest in 1881. Since this date the number has been still more extended. In March, 1887, Osler reported nine cases, with autopsies (*Canada Medical and Surgical Journal*), to which he added commentaries.

In April, 1887, Bucquoy published a comprehensive article, reviewing the state of opinion as to the diagnosis of the disease, and formulating new and more precise rules, basing his conclusions upon the observation of five cases, four of which recovered. The paper is a valuable contribution, as it gives a new working basis, a thesis to support or reject, by further study and comparison of symptoms and lesions. During the past year there have been several cases added to the record, all of them with autopsies, which afford fresh illustrations of our present knowledge. But no complete and accurate collection of cases has yet been made. All doubtful cases which have not the anatomical peculiarities of a simple peptic tumor should be excluded from this list, whenever such a complete collection is made.¹

The history of a case which I have now under observation, affords an opportune text for reviewing the subject in its new phase; it has presented all of the symptoms which Bucquoy thinks are characteristic of duodenal ulcer.

¹ The first case given in the bibliography of duodenal ulcer, in the article in Ziemssen's *Cyclopædia*, is not one of round ulcer, but of a perforation of the wall of the intestine by an abscess of the liver.

Duodenal ulcer is much less common than gastric ulcer; the proportions are as 1 to 30. Ulcer of the stomach is found in 1 to 2 per cent. of deaths from all causes; it is a common lesion, Trier found 261 cases of gastric to 28 of duodenal ulcer, and Willigk, in autopsies made in hospitals in Prague, found the stomach affected 225 times, while in 6 cases only was the lesion in the duodenum. In Hughes Bennett's cases, selected for their interest or variety, there are four of gastric and one of duodenal ulcer. Osler found 9 cases of the intestinal variety in 1000 autopsies.

Etiology.—Duodenal ulcer is most common between thirty and forty years; gastric ulcer between twenty and thirty. After sixty years both diseases are rare. Ulcer in the duodenum has been found at six, eight, nine, and fourteen years, but is very rare in early life. C. R. Woods saw one in an infant immediately after birth (*Med. Press and Circular*, 1878, N. S., xxv., 1888).

Sex exerts an opposite influence in the two diseases. Out of Krauss's 64 cases of ulcer in the duodenum, 58 were in men, a percentage of 96 $\frac{1}{2}$, while of those who had gastric ulcer 60 per cent. were women. Chlorosis and anæmia are mentioned as having a decided effect in producing it.

Occupation and station in life have an influence in the case of the stomach ulcer; the poor are more affected by it; it is met with in needle women, maid servants, and female cooks. In the case of the intestine no such predisposition exists.

Ulcer of the duodenum occurs in connection with certain constitutional states, and from other causes which do not seem to have any effect in bringing about the same disease in the stomach, as septicæmia, erysipelas, waxy degeneration of the abdominal viscera, long-continued abuse of alcohol, suppression of hemorrhoidal discharges, cardiac and pulmonary diseases.

The frequent occurrence of duodenal ulcer after burns or scalds of the skin, and more rarely after frostbite, has been frequently noted; the ulcers, however, which occur in this association ought not to be classed with those which are more chronic in their course and which have no evidence of inflammatory action about them.

Many of the cases which have been recorded have occurred in men who have been in apparent health, or who have had no symptoms beyond those of indigestion.

Pathogenesis.—The fact that the round ulcer is found in the beginning of the duodenum, above the point where acid reaction is changed to alkaline reaction by contact with the bile and pancreatic juice, goes to show that the genesis of duodenal ulcer is the same as that of gastric ulcer. The primary change in the tissue is a vascular disturbance due to a variety of causes, as chronic congestion from hepatic disease, acute

and chronic intestinal catarrh from any cause, or spasmodic contraction of the muscular wall of the intestine. Anæmia and feeble circulation may also be causes. Irritating ingesta and external injuries¹ may have the same effect as in gastric ulcer. As a result of such conditions of circulatory disturbance an arrest of circulation may take place in a limited area from embolism or thrombosis. A portion of the wall of the gut becomes deprived of nutrition, dies, and is acted on by acid corrosion. The ulcer is a peptic ulcer, the result of a process of digestion or solution of necrosed tissue.

The pathological anatomy of ulcer in the duodenum does not need much description in a paper of limited scope. The ulcer is found in the majority of cases in the horizontal portion of the intestine, on its anterior wall near the pylorus, that is, well above the opening of the bile and pancreatic ducts. There is usually only one, sometimes several ulcers. Occasionally ulcers are found in the intestine and stomach at the same time (J. Finlayson, *Glasgow Med. Journal*, Oct. 1887), and in one case an ulcer extended the same distance on each side of the pyloric ring. In shape the ulcer is round, infundibuliform and terraced, without any evidence of inflammatory action at its periphery. If a perforation has occurred, the small pin-head opening is at the bottom of the ulcer, and peritonitis has resulted. Adhesion with neighboring organs may prevent perforation and in rare cases inter-intestinal or gastro-intestinal fistulæ have resulted from perforations, connecting one viscus with another after the formation of adhesions.

If cicatrization sets up in an ulcer, in time a scar only is left to mark its place, and sometimes the contraction of cicatricial tissue may lead to a narrowing of the pyloric orifice, and to dilatation of the stomach, or to irregular dilatation of the intestine; the bile duct or pancreatic duct openings may be closed in the same way.

The symptomatology of the disease is well illustrated by the following history of my case:

Mr. X., æt. forty, without any special hereditary predisposition and of good health in early life, began to complain of symptoms of indigestion about twelve or fifteen years ago. His life was usually a sedentary one, although he would periodically indulge in active exercise in outdoor sports. He was a robust, healthy man, weighing 175 pounds, with a ruddy complexion. The symptom of which he complained most during this long period, and which he always regarded as due to indigestion, was a pain, sometimes severe in character, seated in the right hypochondrium, at and below the lower border of the liver.

In 1881 he began to be much depressed in spirits, brooded over his

¹ The influence of hot ingesta in producing gastric ulcer has been experimentally demonstrated in dogs by Decker (*Fortschritte der Med.*, B. v. 415). The effect of trauma has also been studied experimentally by Rittio. A blow on the stomach of an animal caused hemorrhagic infiltration between the mucous membrane and the tissue below; the gastric juice would have soon converted this area into an ulcer (*Zeit.-ch. f. kl. Med.*, B. xii, H. 5 and 6, 592).

suffering and indigestion, and during two years made no improvement. At the end of this time he felt better until 1887. In the last week in March, 1887, he went on a hunting expedition and ate very indigestible food for some days. The pain in the side grew worse, and was especially so on his return home. In April this pain became distinctly localized at the lower edge of the liver in the right hypochondrium; it always came on three hours after eating, and lasted one hour or longer. It was accompanied by a sense of oppression, and he was always very much depressed in spirits at these times. There was never any symptom of gastric indigestion, and no constipation or diarrhœa.

He describes the history and character of the pain in the following words: "After months of health there would be some slight symptom of indigestion, as heartburn or a sudden feeling of nausea, accompanied by a copious flow of saliva lasting a few minutes. This sudden nausea and swallowing of saliva would occur only once or twice at the beginning of the disorder. But this symptom has been present at the beginning of so many attacks, that I came to consider it the forerunner of the pain in the right side. A few days or more after this the uneasiness in the right side would commence, followed by more or less pain for several weeks, until relieved by medicine or diet, or by the attack wearing off."

During April, and especially after the 12th, the pain was worse than it had ever been before, the paroxysms being most intense at eleven to twelve in the morning (three hours after breakfast), and in the afternoon (about three hours after dinner), but not ceasing until late in the night. The pain was at its maximum for an hour after its onset, then lessened, but did not disappear for several hours later.

On April 29th he noticed that his movements were black (he had two on this day), but they were otherwise normal in appearance. Later in the day he felt weak, but spent the evening with some friends, who remarked that he did not look well. At bedtime his legs seemed very feeble, and he had a profuse perspiration. April 30th, in the morning had another black stool, semi-solid and large, and afterwards he was so weak that he remained in bed and took only a milk diet. At 11 p.m. he became suddenly collapsed and partly unconscious; collapse being due, as subsequent events proved, to intestinal hemorrhage. Soon after he had an involuntary discharge of a large quantity of blood, with some dark tarry matter from the bowel. Stimulants were given and he revived somewhat; half an hour later he had another copious stool of the same nature. Aromatic spirits of ammonia and ergot internally, and numerous hypodermatic injections of whiskey were given by Dr. Franzoni, who had been summoned hastily. Dr. Franzoni states that the collapse was accompanied by fainting attacks, and that he seemed alarmingly ill when he arrived.

When I saw him, one hour later, he was still in a state of partial collapse, pulseless, and cold. Ice was applied to the abdomen and hypodermatic injections of ergot and whiskey were continued. Later, acetate of lead and opium were given by the mouth in full doses, and iced Valentine's beef juice was the first nourishment allowed him. Very gradually, the patient came out of the condition of collapse, but remained very feeble for eight or ten days. By April 5th he was much stronger and slowly convalesced. The bowels were not moved for ten days, and no further hemorrhage occurred. From this time he was kept on liquid diet for some week, but as the pain did not reappear he

was then allowed to return to solid food. From that time, April, 1887, up to within three weeks, there had been no symptom to indicate the existence of any disease in the intestine, but since the early part of this month there has been occasional pain after eating, and for a week past severe pain as before, about three hours after each meal. He is now taking nothing but milk.

The more characteristic symptoms, as exemplified in this case, are the occurrence of pain of a severe character three to four hours after eating, situated in the right hypochondrium, below the lower border of the liver and to the right of the median line, that is, over the duodenal region. There is also increased sensibility to pressure over the same area. The stomach digestion is in perfect order; there is no eructation of gas or fluid, no heartburn, and the appetite is good and the tongue clean. Sometimes vomiting occurs, often when the pain is at its height. Under appropriate treatment such a case may go on to recovery; but usually, sooner or later, hemorrhage occurs from the extension of the ulcer; if small in amount, and recurring, the patient becomes anæmic without apparent reason; if a larger amount of blood escapes into the bowel, the stools are black and viscid. The amount of hemorrhage determines the extent of collapse and of the acute anæmia. If, as in the case reported, the amount is great, the patient may be in imminent danger, or may die. If, however, he escapes with life, he is by no means out of danger. Perforation and peritonitis may occur at any subsequent time and death is the result.

Under favorable conditions cicatrization begins, and the patient may recover. The duration of the disease is said to be from three to five years; the rapidity of the process of healing depending upon the treatment pursued. Acute ulcers, as from burns, heal quite rapidly. Cicatrization has been seen to begin on the tenth day after a burn; in another case it was completed at the eighth week. Mr. Holmes saw a case where it was finished in twenty-eight days. But chronic round ulcers heal slowly, alternating between extension and repair, and are accompanied by a corresponding fluctuation in the symptoms.

The more positive symptoms have not the same relative value and frequency. *Abdominal pain* is not always present, and just in what proportion of cases it is present cannot be stated; it is seated either in the epigastric region or right hypochondrium. A strict limitation of seat is not of great importance; the pyloric end of the stomach and the upper inch of the duodenum are so near, that in many cases there could not be a marked distinction of seat between the pain of a pyloric and duodenal ulcer. The time of its appearance, however, is of more value; in duodenal ulcer it does not appear until, gastric digestion being ended, the acid chyme passes through the pylorus and enters the intestine. Pain, therefore, which begins at a late period, in two or four hours

after a meal, is more probably of intestinal origin. This late occurrence of pain was noted in my case. The attacks of pain are frequently intense, simulating the agonizing pains of biliary and renal colic. They last from a few to many hours, are especially worse at night, often preventing sleep. In one of Osler's cases (verified by an autopsy) the pain was so severe that the patient could not sleep; "he would frequently sit on the edge of the bed for hours doubled up with pain." My patient's present sufferings are so great that he has frequently required morphia at night. Sometimes the pain is not limited, but radiates in the abdomen, and in other directions, or induces reflex neuralgias, convulsions, dyspnoea, and suffocative attacks. In the case already referred to, the patient described the pain as starting in the epigastric region and passing to the back and round the sides. My patient now speaks of his pain as extending from the right hypochondrium outward and backward in the direction of the liver. He holds his hand over the outer portion of the right lobe of the liver, as if the pain was greatest there.

Intestinal hemorrhage is the symptom upon which most reliance can be placed. It is more constant, and its peculiar character of thick tarry matter shows that it comes from a point high up in the intestine. By excluding hemorrhoids, chronic dysenteric ulceration, malignant and tubercular disease, and the hemorrhagic diathesis, as causes, duodenal ulcer may be recognized by this one symptom alone. Per contra, Trousseau (*Clinique Médicale*, vol. iii. p. 86) reports three cases which he saw with collapse symptoms due to intestinal hemorrhage, the blood passed having the character above mentioned. One of these terminated fatally; no lesion was found in the stomach or intestines.

Among the cases of duodenal ulcer with autopsies, reported during the last year, hemorrhage was a common symptom. In a fatal case of Wising and Wallis (*Tr. Medical Society of Sweden*, February 8, 1887, pp. 71-74) hemorrhage preceded death; two ulcers were found in the duodenum and the intestine contained a large quantity of blood. Dr. Rothmann described at the session on June 20th of the Society for Internal Medicine of Berlin (*Deutsch. med. Zeitung*, No. 53, 1887) the case of a patient who died from perforation of a round ulcer of the duodenum. Two years before death, evacuations of dark blood appeared, which were stopped by applications of ice, and sugar of lead internally. They recurred, after a considerable time ceased, but returned in January, 1887. June 16th he was taken suddenly with the symptoms of perforation and died in twenty-four hours. Coats and Gairdner showed a specimen of perforating ulcer of the duodenum to the Glasgow Pathological and Chemical Society in March, 1887 (*Glasgow Med. Journ.*, October, 1887); hemorrhage had occurred during life. It was present in four of Osler's cases, and was evidently the cause of death in two.

Vomiting of blood occurs in a certain proportion of cases.

But there are numerous cases in literature in which there were no symptoms during life, or none so marked as to attract the patient's attention, up to the moment of a dangerous or fatal hemorrhage; a perforation and rapidly developed peritonitis have often been the first signs of the existence of any serious disease.

In other instances, the symptoms have been so unlike those which I have mentioned as being typical, that they have been mistaken for numerous other conditions which they simulated.

The following are examples of latent forms without symptoms, or without typical symptoms. Bennett, in his *Clinical Medicine*, reports a case in which death occurred from pulmonary and renal disease; a post-mortem examination revealed a duodenal ulcer which had perforated the intestinal wall, peritonitis resulting. The ulcer had not been manifested by any symptom whatever during life. Pepper and Griffith record a fatal case of pulmonary tuberculosis (*THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, January, 1888), in the course of which there had been evidences of dilatation of the stomach and fermentative dyspepsia, but there were no symptoms pointing directly to the duodenum as the seat of disease; a shallow ulcer was found near the pylorus, and two or three feet lower down there were numerous other ulcers. The absence of pain in this case is not so remarkable, as the ulcerative process was not deep, and the patient was probably taking food in small quantities and in liquid form for a long time before his death. These authors refer to a case of death by perforation of a duodenal ulcer and by the establishment of pyopneumothorax subphrenicus. The ulcer "had existed for some time totally without symptoms" (Pusinelli, *Berlin. klin. Wochenschr.*, May, 1887, 312). Littlejohn presented at a meeting of the Medico-Chirurgical Society in June, 1887, three specimens of duodenal ulcer. The second case was one of fatal perforation of a duodenal ulcer occurring in an intemperate soldier, who had been in hospital in the Soudan with what was said to have been dysentery; he was not known to have any symptoms of this disease. The third specimen was from a patient who died suddenly two days after his discharge from the Royal Infirmary, where he had been treated for delirium tremens. He had no symptoms of the fatal lesion, and had been dismissed as well. Urgent vomiting immediately preceded death. An ulcer was found in the duodenum, but there was no perforation; the cause of death was not clear (*Edinburgh Med. Journ.*, October, 1887).

As an example of the simulation of other diseases by duodenal ulcer the following case may be given, as reported by A. Dutil (*Bulletin Soc. Anat.*, July 1, 1887): A man in perfect health was seized with violent colic two hours after eating; vomiting, tympanitic distention, constipation, and almost entire suppression of urine followed. He was ill eighteen hours, and was supposed to be suffering from internal strangulation. At

the autopsy a round ulcer with sharp-cut edges was found on the anterior wall of the duodenum just below the pylorus, perforated at its base with resulting peritonitis.

The symptoms due to ulcers of the duodenum and perforative peritonitis have been mistaken for lead colic, hepatic and renal colic, poisoning, internal strangulation or strangulated hernia. A. Clark reported two cases which were mistaken for cholera, and isolated. The diagnosis of gastric ulcer has frequently been made in cases where the lesion was in the duodenum. And there can be very little doubt that intestinal hemorrhage has often been referred to causes other than the true one.

Diagnosis.—Is the diagnosis of duodenal ulcer possible, and can it be differentiated from gastric ulcer? Wilson Fox (Reynolds's *System of Medicine*) says that "the symptoms of duodenal ulcer differ but little from those which are met with when the disease occurs in the stomach." Osler (*loc. cit.*, p. 461) believes that "the diagnosis of duodenal from gastric ulcer is rarely possible, as there are no distinctive features. The gastralgic attacks occurring at intervals for many years appear to be more common in duodenal disease." Bucquoy, on the other hand, says that "the diagnosis of simple ulcer of the duodenum is not impossible, as is supposed, and, moreover, is distinguished by well-defined characters from ulcer of the stomach, with which it is most often confounded."

Much of the confusion in diagnosis is due to the fact that observations which are made the basis for conclusions are many of them imperfect. In Osler's nine cases, for example, there are four with little or no antecedent history. Patients are often not kept from work by the existence of a duodenal ulcer, and they only apply for relief when there is excessive hemorrhage or perforation. Moreover, there is a question whether it is proper to class all forms of duodenal ulceration under this head. Round, simple, or perforating ulcer of the duodenum is a specific lesion, and unless the ulcer has a definite and characteristic appearance, the case should be excluded from this category. When the ulcer is large, irregular, and is complicated with the existence of similar ulcers in the intestinal canal lower down, it probably is *not* a true peptic, duodenal ulcer. In Case I. of Osler's collection, the ulcer was three-quarters of an inch in diameter, the edges overlapped; he supposes it to have resulted from the rupture of a cyst of Brunner's glands. There were also ulcers in the cæcum, ileum, and colon. In Case IV. an extensive ulcer of the duodenum had nearly healed, with resulting stenosis. This may or may not have been a peptic ulcer. Case II. was a case of phthisis with a single ulcer in the duodenum, and with extensive ulceration of ileum, cæcum, and colon. In Case VI. there was an "irregular ulcer extending around the greater part of the circumference of the gut and presenting an imperfect division into two portions;" the edges were undermined.

I refer to these cases to show that some classed as examples of simple ulcer of the duodenum, and upon which statistical conclusions are based, do not properly belong to this class. Greater precision in classification may lead to different conclusions as to our ability to distinguish duodenal from gastric ulcer and from other lesions.

I have noticed, also, that the cases in which the more characteristic symptoms have appeared, have been examples of uncomplicated simple ulcer of the duodenum, when this was the primary lesion; whereas, latent cases, cases without symptoms or with atypical symptoms, have been those in which the ulcer did not have the characteristic appearance and was accompanied by lesions in the lungs, kidneys, and other organs, and by chronic cachectic states. This was the case in Bennett's and Pepper's cases, which have been quoted as examples of duodenal ulcer without symptoms.

It seems to me probable that in time primary peptic ulcer of the duodenum will be differentiated and be distinguished by its symptoms from other ulcers in the same region.

In a certain number of cases, where the symptoms are latent, a diagnosis is impossible up to the moment of a profuse intestinal hemorrhage or a fatal peritonitis. The character of the blood passed and the exclusion of other sources of blood may justify a diagnosis from this symptom alone.

Perforative peritonitis, from duodenal ulcer, occurring in a case without previous history, cannot be traced to its true cause; it may be suspected from the location of the pain of onset.

Cases in which duodenal pain of chronic intermittent character is the only symptom, may be mistaken for gastralgia or enteralgia, but this condition is more common in women associated with uterine disease, anæmia, chlorosis, or malaria, or may be due to exposure to cold. It bears no relation to food, and is not increased by pressure.

The pain of chronic intestinal indigestion is not severe, nor so circumscribed and is accompanied by borborygmi and occasional diarrhœa. Acute intestinal colic or the passage of a biliary or renal calculus, may be recognized by the causation, time of occurrence, seat, character of the pain, and subsequent history. There are other lesions, as mesenteric or visceral cancer (liver, pancreas, kidney), which might be attended with pain in the same region, but the progress of the case, the growth of a tumor, and emaciation would clear up this point.

A diagnosis of duodenal from gastric ulcer is possible, perhaps easily made, if a sufficient number of symptoms are present.¹

¹ Wilson Fox (*Diseases of the Stomach*, 1875) says: "Without the simultaneous occurrence of the greater number of the symptoms the diagnosis of (gastric) ulcer must often remain somewhat uncertain."

Gastric Ulcer.

1. Most common in women from twenty to thirty years of age.
2. Pain in epigastrium soon after eating.
3. Pain relieved by vomiting.
4. Vomiting of mucus, bile, and food—gastric indigestion.
5. Hæmatemesis common.
6. Hemorrhage from intestines rare.

Duodenal Ulcer.

1. Most common in men from thirty to forty years of age.
2. Pain in right hypochondrium two to four hours after eating.
3. Pain not relieved by vomiting.
4. Vomiting rare; no gastric indigestion.
5. Hæmatemesis rare.
6. Hemorrhage from intestines common.

One would be justified in making a diagnosis of duodenal ulcer if a man, otherwise in good health, between thirty and forty years of age, suffers from attacks of severe pain below the edge of the liver to the right of the median line, the pain coming on from two to four hours after eating, lasting for from one to four hours, and gradually lessening, to recur after the next meal, being most prolonged and most severe at night. Such a symptom, without gastric indigestion or the evidence of any organic lesion, pursuing a chronic course during a year or more, with remissions and exacerbations, being benefited by liquid diet and aggravated by indiscretions in diet, could reasonably be attributed to duodenal ulcer as a cause. This diagnosis would be confirmed by the occurrence of intestinal hemorrhage of the character described, or by the sudden development of perforative peritonitis.

Prognosis.—An unfavorable termination has been thought to be the rule, but this opinion was based on an imperfect knowledge of the disease; it was frequently not recognized except at the autopsy; only fatal cases, as a rule, have been recorded. If a diagnosis could be made early and a proper treatment patiently carried out, there is every reason to think that the result would often be successful. Ulcers of the stomach are known to heal in many instances. Out of 11,888 post-mortem examinations in Prague, there were found in 373, or 3.1 per cent., healed gastric ulcers, and in 164, or 1.4 per cent., open ulcers. 85 to 90 per cent. of all cases of gastric ulcer recover. It is reasonable to believe that duodenal ulcer has as favorable a prospect of recovery as this: four out of Bucquoy's five cases recovered.

Treatment.—The plan of treatment must be essentially the same as that pursued in gastric ulcer. The cicatrization of the ulcer is hastened by rest and absence of irritation, and delayed even by the necessary functional activity of digestion. An exclusive milk diet kept up for a long time is, therefore, first to be tried; and the milk can be made more digestible and less irritating by the various means at our disposal. When the palate tires of milk, other liquids can be given. In certain cases feeding by the rectum may enable the patient to do without food

by the mouth almost altogether, and when hemorrhages occur frequently or when the abdominal pain is increasing, such a course should be tried. Pancreatin, pepsin, and other aids to digestion should be given by the mouth if there are evidences of intestinal or gastric indigestion.

Food must be given and nutrition must be sustained, as the danger of anæmia and emaciation is great. Iron, in a very soluble form or hypodermatically, may be required. Quinke produced artificial gastric ulcer in dogs and found that repair was rapid except in anæmic and debilitated animals. (Ziegler: *Pathological Histology*, vol. 2, p. 269, Wood's Library edition.)

It is doubtful whether there is any remedy which favors cicatrization of the ulcer by its local effect, unless it may be nitrate of silver in small doses kept up for some time. The ordinary remedies for digestive disturbances and constipation may be needed from time to time. In the event of hemorrhage, ice to the abdomen, ice by the mouth, ergot and morphia, subcutaneously if there is pain, with large doses of acetate of lead or other styptics internally, are the remedies. If death is imminent from excessive loss of blood transfusion would be demanded; this has been practised successfully in the hemorrhage of gastric ulcer. The injection into the veins of a solution of common salt is believed to be equally efficacious and without some of the dangers of blood transfusion.

If the symptoms should indicate perforation and beginning peritonitis, there is but one course to be pursued, and that is to open the abdomen and repair the rent, excising the ulcer so as to have only normal tissue left. If this is suggested and approved of in the perforation of gastric ulcer, and even of the intestinal ulcer of typhoid fever, it is entirely applicable in duodenal perforation.

REVIEWS.

A PRACTICAL TREATISE ON DISEASES OF THE SKIN, FOR THE USE OF STUDENTS AND PRACTITIONERS. Second edition, thoroughly revised and enlarged. By JAMES NEVINS HYDE, A.M., M.D., Professor of Skin and Venereal Diseases, Rush Medical College, Chicago, etc. Pp. 676. Philadelphia: Lea Brothers & Co., 1888.

IN the five years which have passed since the publication of the first edition of this book much and good work has been done in dermatology. The number of its special students has largely increased, and their observations, published in the form of general treatises, monographs, papers in journals, and reports of discussions in congresses and societies, have so multiplied that it has become almost an impossibility, even for the specialist, to keep one's self fully acquainted with the progress in this department. A new edition of Professor Hyde's valuable treatise, representing, as it does, these latest advances in dermatology, is therefore very welcome.

The whole work has been largely rewritten, and new matter to the extent of one hundred pages has been added, devoted mostly to the description of diseases recently isolated from affections with which they have hitherto been confounded, to new and important views relating to the etiology and pathology of others, and to the action of many new remedies, all of which have received full and careful consideration. Thirty additional woodcuts and two colored plates, illustrative of the gross and microscopic appearances of diseases, have also been introduced, which are generally excellent in quality. The greatest change in form has been the rearrangement of diseases in accordance with the plan of classification officially adopted by the American Dermatological Association, which greatly adds to the value of the book for practitioner and student, as this system is a simplification of Hebra's, and is more generally in use in this country than any other.

It is not our intention to offer again a critical notice of the work, although a few of the author's views challenge discussion:

It may be doubted if the conditions described under the title "erythema intertrigo" are rightly placed; they might well be regarded as the erythematous stage of eczema in most instances. We wish, too, that the author had given fuller account of the various forms of erythema multiforme.

In his chapter on lichen ruber sufficient attention has not been called to the occurrence of the intense melanoderma which forms so striking a feature in the last stages of most cases of this rare disease.

The possible etiological relations of the so-called verruca necrogenica to cutaneous tuberculosis, which have been lately discussed by pathologists, have received no mention.

In his directions for the employment of electrolysis in hypertrichosis, which are given with the most satisfactory fulness of detail, the author states that it is better to operate in succession upon contiguous hairs, instead of selecting one here and one there, as the latter course is productive of greater pain. The former method may, indeed, be less painful, but is in our judgment much more likely than the latter to result in permanent scarring, in consequence of the greater inflammation produced thereby.

In connection with the etiology of alopecia areata it seems to us that somewhat insufficient consideration has been given to the evidence which has been presented by eminent observers, bearing upon the question of its sometime parasitic nature.

In his account of lupus erythematosus a more detailed description of its appearances upon the hands, which Dr. Hyde is especially competent to contribute, and upon the scalp, would have given it greater value.

The chapter on tuberculosis of the skin is unsatisfactory, in which respect it unfortunately represents fairly enough our present knowledge of an important field of cutaneous pathology.

With regard to the favorable influence of a residence in the United States upon the course of leprosy in the individual, we are not prepared to admit the optimistic views of the author, although there can be no question that the changed ways of living here may materially affect the further spread of the disease among the immigrants from Scandinavia.

But these few questionable points of criticism affect in no measure the great value of the work. We can heartily commend it, not only as an admirable text-book for teacher and student, but in its clear and comprehensive rules for diagnosis, its sound and independent doctrines in pathology, and its minute and judicious directions for the treatment of disease, as a most satisfactory and complete practical guide for the physician.

J. C. W.

TRAITÉ DE CHIRURGIE DE GUERRE. By E. DELORME, Médecin-Major de 1re classe; Professeur de clinique chirurgicale et de blessures de guerre au Val de Grâce. TOME PREMIER. HISTOIRE DE LA CHIRURGIE MILITAIRE FRANÇAISE, PLASIE PAR ARMES A FEU DES PARTIES MOLLES. Avec 93 figures dans le texte et une planche en chromo-lithographie. Pp. viii., 668. Paris: Félix Alcan, 1888.

TREATISE ON THE SURGERY OF WAR. By E. DELORME, Surgeon-Major of the 1st class, etc. Volume I.

WHEN the French army was beleaguered at Metz in 1553, the garrison, depressed by disease and injuries and hopeless of delivery, were almost on the point of surrendering, when Ambroise Paré was conveyed through the enemy's lines and brought into the city. The soldiers greeted him with acclamation, crying, "We need have no fear of dying, now that Paré is with us!" New spirit was infused into all hearts, and a stout resistance to the enemy was maintained until the siege was raised. While perhaps the personal influence of Paré has not attended all of his successors, it is a noteworthy fact that from his day the French military

surgeon has possessed great influence with his comrades and a high reputation among his professional contemporaries. A work upon military surgery, then, emanating from the school of Val de Grâce, carries with it much authority and is entitled to a most careful study.

Not the least attractive feature of the work of Delorme is the extensive review of French military surgery with which it is introduced. Occupying a little more than half of the first volume, the space devoted to the historical aspect of the subject is in marked contrast to that observed in English and American works, and evinces a commendable and patriotic scholarship. The sketches take the form of a series of brief biographies, in connection with which the surgical work of the worthies treated of, is presented. Although the series is arranged in chronological order, so far as the lives of the subjects are concerned, the history of any particular procedure can be obtained only by digging among the mass of disjointed biographical sketches. It would seem that the history of the military phase of the surgical art could have been better shown, had he arranged his matter progressively, so as to show the growth of the various topics involved.

A chapter of considerable length is devoted to the description of the arms of modern warfare, including both cutting and piercing arms and firearms. It is apparently intended to present an exhaustive discussion of the subject, for the arms used by the principal powers are considered in detail, giving the charge of powder, and the size, weight, and shape of the projectile—the latter graphically. We have not the means at hand for testing the correctness of his observations upon the arms of other countries; but when he informs us that the United States Army is provided with the "Remington-Springfield, calibre 58," the "Springfield-Remington, calibre 50," and the Berdan rifles, he is far from the truth. During the War of the Rebellion, when an immense body of volunteer troops was in the field, the arms were almost as various as the volunteer organizations which used them, and we believe that at one time pieces of calibre 50 and 58 were manufactured at the Springfield arsenal. But no such varieties of ordnance as the first two named by Delorme were ever used by our army, nor were any such ever manufactured. The Remington rifle is used by certain militia organizations, but the only model used in the United States service at the present time, and for a considerable number of years past, is the Springfield breech-loader, calibre 45, admitting a cartridge containing seventy grains of powder, propelling a conical projectile weighing five hundred grains with an initial velocity of thirteen hundred feet.

The remainder of the volume is devoted to a consideration of wounds involving the soft parts. Here M. Delorme falls into line with modern surgery by prescribing antiseptic dressings for individual wounds, but it is to be regretted that he has not seen fit to enter more at length into the general consideration of the application of aseptic and antiseptic methods in the treatment of wounds received in war. With all the machinery of a well-equipped hospital, with ample skilled assistance, and with a comparatively small number of cases, civil aseptic surgery has advanced well on the road to perfection. But so much greater are the difficulties with which the military surgeon has to contend, that the case is quite different with the surgery of war. The problem of antiseptic dressings amid the flying dust, the bewildering smoke, and the confusing roar of the battlefield is a difficult one. But surely, starting from the founda-

tion laid by the civil surgeon, many advances in technique must have been made. That the recent wars of the French, the campaigns in Tunis and in Tonquin have not been entirely unproductive in this respect, is very vaguely indicated however. German authors have been particularly fruitful upon this subject, the recent work of Mosetig-Moorhof being a case in point.

The importance of the first dressing cannot be too strongly emphasized at any time, and its importance is all the greater in military surgery where, because of the deluge of wounded, the first dressing must, in many cases, be the only one for a considerable period. Accordingly the dressings should be portable so that they can readily be carried by bearers up to the line of battle itself, where the timely application of a suitable dressing may prevent many a death. The apparatus of aseptic operative work should also be reduced to a minimum in bulk and a maximum in efficiency, for field hospitals and first dressing stations, in particular, are subject to sudden removals. The technique of modern military surgery then differs in essential details from that of civil life, and the absence of a thorough discussion of these points in a work upon the surgery of war is an inexcusable blemish.

His chapter on lesions of the bloodvessels opens with arteries, and considers first contusions, proceeding then to penetrating wounds, illustrating, by drawings of his own specimens, a number of cases of lateral and perforating wounds and complete sections. Here he introduces a section on provisional hæmostasis, showing the methods and localities for the application of digital compression, with some remarks on prepared and extemporized tourniquets. While noting the method of checking hemorrhage in the leg or forearm by forced flexion of the knee or elbow, he omits any reference to the method of obtaining this result by forcibly flexing a limb upon a hard, smooth surface, which is in most cases applicable to wounds of the entire length of both extremities, and is an exceedingly convenient temporary method of hæmostasis.

In treating of wounds of the veins, he rejects the lateral ligature, believing that, in view of the increased danger of recurrent hemorrhage, total ligature is the preferable procedure. Neither does he refer to the method of closing lateral incised wounds in large vessels by stitching the lips of the wound together with fine aseptic sutures. On the whole, however, his discussion of wounds of the vessels is excellent and reliable.

More than the usual amount of space is devoted to lesions of nerves, the material for which is largely taken from the works of Mitchell, Morehouse, and Keen, and other American sources. He, however, does not speak of the distance sutures of his compatriot, M. Assaky, which would seem to be particularly adapted to gunshot wounds, where the continuity of a nerve is apt to be interrupted for some little distance.

Delorme is not an advocate of the primary antiseptic occlusion of all gunshot wounds, holding that fragments of shell should always be removed, and that gun or pistol shots should be extracted or left undisturbed, according to the tolerance of the parts and the form and condition of the missile. In this he takes a conservative position, rather in opposition to the tendency of the day. Holding these views, it would be expected that a complete study of the various bullet extractors would be presented, as is the case. He merely mentions, however, the electric apparatus of Bell for locating a projectile, and entirely ignores the valuable induction balance and telephonic probe of Girdner.

Secondary complications of wounds of the soft parts, secondary hemorrhage, and the secondary complications of nerve wounds, together with inflammatory troubles, tetanus and hospital gangrene are fully and ably discussed. Injuries affecting the viscera, bones, joints, etc., are reserved for the second volume, which will complete the work in 1889.

To an extent unusual in authors of his nationality, M. Delorme has made use of the works of foreign writers, conspicuous among whom are American surgeons. The labors of Otis and Huntington in the Surgical History of the Rebellion have afforded him a treasure which he has used freely. And while not complete as a guide to the actual practice of military surgery, this work contains a mass of well-digested information which will be of the greatest service to the student, and in reality marks an advance in the study of the surgery of war. J. E. P.

OPHTHALMIC SURGERY. By ROBERT BRUDENELL CARTER, F.R.C.S., Ophthalmic Surgeon to St. George's Hospital, etc.; and WILLIAM ADAMS FROST, F.R.C.S., Assistant Ophthalmic Surgeon to St. George's Hospital, etc. Illustrated with a chromograph and ninety-one engravings. 12mo. pp. 554. Philadelphia: Lea Brothers & Co., 1888.

THE authors of this work come forward now, not as new candidates for the attention of their professional brethren, but as those who, having already well demonstrated their ability to discuss in a very clear and agreeable manner the subjects here considered, will at once be accorded attention to their new statement of matters both old and new.

In power to make the setting forth of their views entertaining, as well as instructive, they are well matched; and the piquant, forcible way in which facts are presented serves to rouse fully the powers of apprehension in the reader, reducing to a minimum the effort of perusal, while making the most vivid and lasting mental impression. As an instance of the advantage this power gives an author, take this exposition by Carter, of his objections to "the diathetic nicknaming" of iritis:

"There is one ground, however, on which I strongly object to this ticketing of iritis with the names of various diseases; namely, that the habit is likely to mislead the inexperienced practitioner into an endeavor to treat the name on the ticket, while the iritis may be neglected until it has done irreparable harm. I do not know of any disease which prevents the occurrence of iritis, and, hence, I do not know of any with which it may not sometimes be associated. I have very little objection to its being described as 'syphilitic,' because the description is in many cases accurate, and because it has no tendency to interfere with, but rather to promote, the proper conduct of the treatment; but I do not know how to define the conditions under which the epithet may be properly applied. . . . There are books from the perusal of which one could rise with the belief that to distinguish between syphilitic and non-syphilitic iritis would be a simple matter. A further examination shows that the syphilitic iritis of one writer is the non syphilitic of another, and that the symptoms which one regards as pathognomonic, are by another regarded as unimportant. When we turn to other diatheses or constitutional states, the confusion becomes worse confounded, and the practitioner, possibly not thoroughly skilled in the management of eye-disease, but familiar with the rheumatism or with gout, is not to be overmuch blamed if he is led by the 'imposture and force of words' to attend to what he thinks he understands,

and to neglect that about which he feels less confident. I strongly hold, therefore, that what I may call the diathetic nicknaming of iritis is to be deprecated. It does but darken counsel, and puts empty phrases in the place of knowledge. We do not understand a given case one whit better for calling it 'rheumatic,' and the term tends to relegate to the second place, as a mere accident of another affection, a malady in which all our skill will be necessary if we are adequately to discharge our responsibilities to the patient."

Doubtless the main idea thus set forth could be stated much more briefly, perhaps in one or two short sentences. But if these sentences failed to arrest the attention of the reader and impress his memory, they would be entirely worthless, and would constitute a statement infinitely inferior to the one quoted.

If a concise rigid style has not been adopted, it may seem, on taking up this manual, that the subject can scarcely be treated in a book of its size without some serious omissions. But a careful search shows that none have been made. The authors have avoided extended quotations, either from their own earlier writings, or those of others; and a quotation is very apt to be, to some extent, a repetition, and to require a certain amount of introduction, and so becomes a great consumer of space. Nor has the work been expanded with "copious references," illustrating the breadth of the authors' reading, or with numerous cases mainly suggestive of their great experience. And the condensing of the work to the size of a "clinical manual" has been largely due to the use of thin paper, of which comparatively little is wasted in margins; the book probably representing as much "copy" as the treatise of Juler, which occupies double the space on the book-shelf.

In his earlier writings, Mr. Carter has laid considerable emphasis upon certain observations that seem to leave it very much in doubt whether the disorder of vision commonly ascribed to the excessive consumption of tobacco was really connected with the use of that narcotic. Remembering this, it is of interest to note that he now says:

"The cases of tobacco amblyopia which I have recognized, and in which the diagnosis has been confirmed by restoration of sight when the tobacco was abandoned, have been attended by some pallor of the optic nerves, with no effusion or blurring of their outlines, and by perfect knee-jerks. By the last-named symptom the cases have been discriminated from early stages of locomotor ataxy, to which, as far as the state of the optic nerves and vision were concerned, they bore a great resemblance. My colleague, Mr. Frost, who has seen a large amount of tobacco amblyopia among out-patients, is of opinion that in the earlier stages the disk margins are a little hazy, and that this condition is succeeded by pallor of the outer half of the nerve."

Though no allusion is made to his former argument, throughout his account of the affection, as in the above extract, the views expressed are entirely in accord with those most generally held by ophthalmic surgeons at the present day.

As a substitute for enucleation, evisceration or exenteration, and the Mules' operation, "a great improvement on it, as far as the cosmetic effect is concerned," are mentioned favorably by both authors; and Mr. Frost very frankly states the objection to complete enucleation and the insertion of a glass sphere in the capsule of Tenon, the substitute for the Mules' operation proposed by himself. But the credit for the first proposal of evisceration is here, as by other European writers, given to Alfred Gräfe. Now, although Gräfe proposed it at the Congress of

German Naturalists and Physicians, in September, 1884, probably without knowing that it had previously been proposed and resorted to, the fact is that it had been proposed, and a case in which it was performed reported in the *Transactions of the American Ophthalmological Society for 1878*, by Dr. H. W. Williams, of Boston. It is true that Williams had intended to do merely an abscission, and removed the whole contents of the sclera only because he found an ossified choroid, and had promised the patient that he would not enucleate. But, having thus been led to perform the operation, he proposed it as a common substitute for enucleation, and gave a very good account of its special advantages and disadvantages.

In general, the authors seem quite familiar with American work on ophthalmology, though they credit Dr. Prince, of Illinois, with his tendon advancement operation, to Philadelphia; and describe and figure as "the Loring-Noyes ophthalmoscope" an instrument that smacks strongly of John Bull, and which, with its three mirrors and its handle "of sufficient size and weight to be firmly grasped, and to balance the other parts of the instrument," would constitute no mean weapon in hand-to-hand combat.

The work throughout is marked by its practical character and good common sense, which makes a lapse like the following all the more striking:

"As in the camera, the image formed upon the retina is inverted, and the means by which this inverted image is made to convey a correct impression to the sensorium has been a subject of much dispute among philosophers. The most probable explanation is based upon the positions of the retinal bacilli, which are radial to the centre of the eyeball; so that a bacillus in the upper part of the retina, which receives the image of the lower part of an object of vision, may be said to be looking down toward it, and hence to project it into its right position. The same principle would apply, of course, to all other parts of the retinal surface."

That this question of the erect perception of objects by the aid of an inverted retinal image has puzzled every dabbler in optics and raw student of ophthalmology, cannot be denied; and it has even revealed a lamentable mental haze where we would not otherwise have expected it (see the first number of this journal, November, 1827, p. 163). But Kepler, when he first set forth the facts regarding the retinal image, nearly three hundred years ago, fully explained the matter; and those who would like a particularly full presentation of that explanation, which has never been intelligently questioned, should consult Porterfield on the Eye, published in 1759. The fact is that we are not in any way directly conscious of the existence of a retinal image, much less are we conscious of the relative positions of its various parts. Each separate ray of light makes its impression on one particular part of the retina, giving rise to an impulse which travels by a particular nerve path to influence a particular group of brain cells. By experience, and by experience alone, we learn to associate the stimulation of this particular portion of the sensorium with a certain direction of the object whence the light comes, and so learn to judge of the relative positions of objects. Because light falling in a certain direction always influences the same group of retinal cones, nerve-fibres, and central ganglion-cells, we are able to judge relative positions correctly. But the actual or relative position of the cone influenced has no more to do with that

judgment than has the position of the nerve-fibre or ganglion-cell involved in the process. Will not the "philosophers" stop the "dispute" over the inverted retinal image and the correct projection of objects, and explain why parallel lines appear parallel lines, although the optic nerve fibres are inextricably tangled? Or why a plane seems a plane, although the perceptive cerebral cells are grouped in some totally different geometrical relation?

Such an attempt might at least reveal the folly of confusing the objective and subjective phenomena of any given act; and so finally terminate the dispute in question.

E. J.

THE SURGICAL DISEASES OF THE GENITO-URINARY ORGANS, INCLUDING SYPHILIS. By E. L. KEYES, A.M., M.D., Professor of Genito-urinary Surgery, Syphilology, and Dermatology in Bellevue Hospital Medical College; Surgeon to the Charity, the Bellevue, and the Skin and Cancer Hospitals; Consulting Surgeon to the Bureau of Out-door Relief, Bellevue Hospital; Surgeon to St. Elizabeth Hospital, etc. 8vo. pp. xv. 704. New York: D. Appleton & Co., 1888.

THIS handsome volume is not merely a new edition of the well-known work of Van Buren and Keyes, but a complete revision of that textbook. The original plan of the older work has been retained, and its scope remains the same; but it has been entirely recast, and in a large measure rewritten.

This course has been made necessary by the vast progress which has marked the history of surgery during the last ten years, especially in the field of therapeutics and operative procedures. To bring the book up abreast of the times upon the new device of litholapaxy, suprapubic cystotomy, the modern surgery of the kidney, the treatment now followed in diseases of the tunica vaginalis, and the many minor changes which find expression in the use of new agents, Dr. Keyes was compelled to omit many things, to add considerable new matter, and largely to modify much of the remainder. Some chapters are entirely new, and in order to make room for desired additions all the cases have been dropped.

Of course, such radical changes interrupt the historical sequence of the volume, and detract somewhat from the vividness of the picture belonging to the narrative. But such considerations belong to literature and must be disregarded in practical scientific works, and although Dr. Van Buren's part in the volume has been almost altogether eliminated, the result is eminently satisfactory from a surgical standpoint. As it now stands, it is a treatise which may safely be consulted and which fairly and freely speaks of the most modern methods. Dr. Keyes is enthusiastic in his commendations of litholapaxy, and cordially endorses the high operation for stone, while he decides that the time-honored and brilliant methods of reaching the bladder through the perineum are only applicable in the cases of male children with stones of moderate size.

Dr. Keyes says the book "is an honest exhibit of my views upon all the subjects considered," and as his experience has been large, and his skill and prudence are undisputed, we have no hesitation in saying there is no one in this country whose judgment is more worthy of confidence, or whose directions may be more safely followed.

S. A.

THE INTESTINAL DISEASES OF INFANCY AND CHILDHOOD. By A. JACOBI, M.D., President of the New York Academy of Medicine, etc. Pp. 301. Detroit: George S. Davis, 1887.

A BOOK seasonable, piquant, and useful; answering the need of the mental organism for alterative and acid food after a winter of heavy diet.

To the author's mind "Infant hygiene and the hygiene of the digestive organs in infants appear to be nearly identical;" and the best hygiene is to be secured by feeding with mother's milk. This failing, patent foods are rejected, and average cow's milk, boiled, and oatmeal- and barley-water, with animal broths, white of egg and alcoholics are relied upon. Irrigation of the intestines is highly valued, and the intestinal antiseptics recently approved are described and generally commended.

It is interesting to notice that in his large experience Jacobi has lanced the gums but twice in five years. With many Continental writers, he believes disorders caused by dentition largely errors in diagnosis. His treatment of intestinal parasites is based on fundamental principles of sociology—make the environment disagreeable to the worm and he will evacuate—and the various intestinal disorders of the child receive a like trenchant and effective treatment.

Beginning the book is an epitome, by subjects, of the feeding to be employed with the healthy child, which is most convenient for reference. The book is written in paragraphs of varying length; and is admirably adapted for a hand-book.

Knowledge is rarely made so appetizing, so clear, and so useful as in this volume.

E. P. D.

HYDROPHOBIA. AN ACCOUNT OF M. PASTEUR'S SYSTEM. CONTAINING A TRANSLATION OF ALL HIS COMMUNICATIONS ON THE SUBJECT, THE TECHNIQUE OF HIS METHOD, AND THE LATEST STATISTICAL RESULTS. By BERNARD SUZOR, M.B., C.M. Edin., and M.D. Paris. With seven illustrations. 12mo. pp. 231. London: Chatto & Windus, 1887.

THE author of this little work was commissioned by the government of Mauritius to study Pasteur's system of anti-rabic inoculation, in Paris. Its scope is indicated by the sub-title, and it is evidently written for a popular, or at least non-medical circle of readers. The choice of title is rather unfortunate. We think it much better to substitute "rabies," as less misleading than hydrophobia and more in consonance with the usage in other languages.

The book is divided into three chapters, of which the first is intended to give a "short description of hydrophobia from the earliest times down to the end of 1880." It is taken up almost exclusively by a fairly accurate description of the symptoms and post-mortem appearances of rabies in dogs and man. We cannot pass without condemning the rule quoted from Bouley (p. 17), that immediate destruction of all animals suspected of having been bitten by a rabid animal is to be preferred to keeping the same under observation. Dogs killed under such circumstances are always classed as rabid and their victims doomed to certain death, whereas time, and, if possible, control inoculations, would show a favorable termination in many cases.

Chapter II., which forms more than half the book, will probably be skipped by most readers. Although tiresome in parts it should be read, for there are many passages in it that throw a great deal of light on Pasteur and his methods in general, and of the anti-rabic inoculations as now practised. The chapter, however, is not entirely candid, probably owing to the necessary brevity. Thus we read in several places of the nineteen Russians from Smolensk, and the sixteen who returned cured. It was our impression that the deaths of the "survivors" were chronicled with painful frequency from time to time after their return, and it was only then we learned that wolf bites are so much more dangerous than those of other rabid animals.

Chapter III. is the most entertaining in the book. It gives a vivid and accurate description of the inoculations as practised by Pasteur and his disciples, and of the scenes daily witnessed in the laboratories in the Rue Vauquelin and Rue d'Ulm. The author's enthusiasm, however, leads him to conclusions that are rather too sweeping. The thanks of the scientific world are due to Pasteur for the completeness with which he has investigated canine rabies. That this necessitates the erection of "Institutes" in all countries where rabid dogs occur by no means follows. Wolves, jackals, and other French and Russian terrors do not exist for us, and with the example of Germany before us, where well carried-out dog laws have practically annihilated rabies, we should consider the erection of such an Institute as a step in the wrong direction and a reproach to our common sense and our civilization.

With the limitations we have suggested, Dr. Suzor's book may be recommended to all who wish to obtain an idea of Pasteur's "system." The mistakes in diction and proof-reading are few, and the mechanical part well executed. The "seven illustrations" strengthen the idea that the work is intended for popular circulation.

G. D.

A MOVABLE ATLAS, SHOWING THE PROGRESS OF GESTATION, BY MEANS OF SUPERPOSED COLORED PLATES. By PROFESSOR WITKOWSKI, M.D., Member of the Paris Faculty of Medicine. Text translated by R. MILNE MURRAY, M.D., M.B., F.R.C.P.E., Lecturer on Midwifery and the Diseases of Women in the Edinburgh School of Medicine. London: Ballière, Tindall & Cox, 1888.

As the name implies, the atlas contains a female figure whose organs are colored to represent nature, and from which successive layers may be removed, showing the tissues of the abdomen in their anatomical relations at various periods of pregnancy.

Accompanying the atlas is the text, in pamphlet form, written by Professor Pajot. It is a fair exposition of the views of French obstetricians, in concise form, adapted to British readers by the translator. The French beliefs regarding the treatment of contracted pelvis and the use of the forceps are given, and many of the most valuable points in practical obstetrics have been added by the translator. Atlas and text furnish, in a convenient shape, information which is in the possession of the profession in other forms, and by those to whom diagrams are of benefit, will be found of interest.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
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THE RELATION OF THE ATOMIC WEIGHT OF THE ELEMENTS TO THEIR BIOLOGICAL ACTION.

DR. BLAKE, of San Francisco, has distinguished himself by his investigation of this abstruse subject, in which, indeed, he is a pioneer, and fairly divides the honor of priority with Prof. Crum-Brown, of Edinburgh. In this paper, to which we call the attention of our readers (*Archives de Physiologie Normale et Pathologiques*, May 15, 1888), he states anew the results of his investigations. He had already demonstrated the important relation of isomorphism and the atomic weight to the action of the metals. By the last investigation he has shown that the biological action of the monatomic elements is exerted principally upon the pulmonary artery; of the biatomic elements upon the centre for vomiting and the cardiac and voluntary muscles; the triatomic upon the respiratory centre, the vasomotor, inhibitory, the cardiac ganglia, and the pulmonary artery; the tetratomic, upon the nerve centres, of the brain and cord, and on the cardiac and pulmonary ganglia.

Although these studies may have but little practical utility at present, they must ultimately serve an important purpose.

ACTION OF SPIRITUOUS DRINKS ON THE LIVER.

DR. ZENON PUPIER publishes (*Archives de Physiologie*, May 15, 1888) an elaborate paper on the effects of various forms of alcoholic drinks on the structure of the liver. This careful physiological research confirms previous observations on the action of alcohol. Dr. Pupier finds that the prolonged use of alcoholic drinks—absinthe, red wine, white wine, alcohol—produces well-defined effects.

Separating the water of the tissue, it causes a desiccation that includes structural changes.

Nutrition is retarded and fatty deposits occur, corresponding, for example, to the *steatosis* of atheroma. At a more advanced stage, it disintegrates the membrane, reducing it to the fibrillary state, promotes the deposition of lime-forming cretaceous masses, and advances to the stage of *sclerosis*.

There are peculiarities in the character of the pathological changes belonging to each form of alcoholic fluid. Absinthe alcoholic drinks cause changes typically *cirrhotic*. With white wine the cellular degradation is especially pronounced.

OLEANDER [NERIUM OLEANDER].

DR. POULAUx (*Bull. Gén. de Thérap.*, May 15, 1888) has recently made an elaborate investigation, physiological and clinical, of oleander. This plant has long been known, and many cases of poisoning have been reported. It was first administered internally in 1818, and the last research into its physiological properties, except this one of our author, was made by Prof. Schmiedeberg (*Archiv der Path. experiment.*, etc, vol. xvi.).

Oleander is a member of the family *Apocynaceæ*, an evergreen, and grows most luxuriantly near the water. Climate exercises an important influence over its several constituents. The bark contains a greater proportion of its active principles than any other part of the plant.

According to Schmiedeberg, oleander contains an alkaloid, which he has named *neriine*, and which has properties like those of *digitaline*; *oleandrine*, which corresponds to *digitale*, and a glucoside, *nerianitin*, which acts in a manner similar to *digitaline*. The reader not familiar with Schmiedeberg's analysis of digitalis, needs to be told that he has assigned the names above given to the products of his analysis of commercial digitaline.

MECO-NARCEINE.

M. LABORDE, well known for his investigations into the physiological actions of remedies, has recently reported on the actions and uses of a new form of an old remedy (*Revue de Thérapeutique*, May 15, 1888). He entitles the new remedy *Meco-narceine*. Discovered by Pelletier, narceine was studied by Bernard, who ascertained that it has hypnotic properties and is not poisonous. The difficulty in obtaining it in a pure form, and its exceeding insolubility, discouraged its use.

Laborde finds that this substance, designated by him *Meco-narceine*, is the alkaloid narceine, to which some other unknown alkaloid adheres, and that the combination can be utilized as a remedy. He has ascertained that it possesses hypnotic properties, and moderates the activity of the respiratory and cardiac excito-motor or reflex functions.

He has employed *Meco-narceine* in pill form, and in a mixture with syrup, in the dose of one-twelfth to one-sixth of a grain. The sleep produced by it is tranquil and is not followed by unpleasant after-effects.

He has prescribed it successfully in cases of wakefulness due to nervousness, or occurring as an incident to chronic diseases, and in bronchial affections to relieve cough, and to diminish the expectoration. It has proved useful, also, as a remedy for recent neuralgia.

SULPHONAL.

The new hypnotic has been the subject of much study and experiment. In the *Berliner klin. Wochen.*, Nos. 16 and 17, 1888, there are papers by PROF. KAST and DR. G. RABBAS—the former a physiological, and the latter a clinical paper.

Kast finds that it does not materially affect the frequency of the pulse and respiration; only by large doses is the blood pressure lowered to any extent. The sleep caused by it is like the natural state, and when normal sleep occurs, it is greatly prolonged.

Kast finds himself in a position to recommend sulphonal as a hypnotic of a reliable character, although not to be considered phenomenal. Its special use is as a means of promoting sleep at its regular and accustomed periods. The duration of the hypnotic effect ranges between one-half to two hours, from small doses, to five to eight hours, from the maximum. The patient emerges from the hypnotism, free from the usual unpleasant effects which follow other agents of the kind.

Rabbas reports the experience of the Marburg clinic. He says that as a hypnotic sulphonal is superior to amylene and paraldehyde. As compared with chloral, its action is not so profound, but the duration of the effect is longer.

Sulphonal is not difficult to administer: its taste is not disagreeable, and it can be given in the form of powder, or in simple solution. The dose ranges from 15 grains to 3j.

TREATMENT OF VENEREAL DISEASES.

The abortive method of Mr. Hutchinson, to which we called attention in our last issue, has provoked considerable discussion. We submit to our readers some of the more important practical observations which have appeared recently. As representative of a French school of syphilographers, we give below an abstract of M. CH. MAURIAC's conclusions (*Revue de Thérapeutique*, May 15, 1888) in a paper treating of gonorrhœa.

The abortive treatment of gonorrhœa is possible only in a case that has been in existence but a few hours, and such attempts during the acute period are not only useless but dangerous. He holds, also, that the microbe theory as a basis for treatment is illusory. An antiphlogistic method, up to the disappearance of the acute symptoms, is necessary. The "repressive treatment," of copaiba and cubeb internally, and sulphate of zinc by injection, is the most effective; this to be undertaken only after the complete subsidence of the acute stage.

If French therapeutics continues according to the old traditions, as M. Mauriac's paper indicates, it is only another proof of the decadence of their great school.

English opinion of the conservative kind is represented in the paper of Mr. F. W. Lowndes, which has just appeared in *The Lancet* of May 26, 1888. He treats of all the forms of venereal diseases, and his opinions are based on extensive observations, during thirty years. It would seem that the old traditions still rule in England also, for Mr. Lowndes says: "I have found that this treatment (antiphlogistic, followed by the repressive) holds its own up to the present

day." This ancient method consists of "an antacid mixture," containing liquor potassæ, tincture of hyoseyamus and nitrous ether, followed by copaiba paste, which includes cubeb, hyoseyamus, and camphor. For injections he adheres to zinc chloride—one grain to four ounces—and adds a very little tincture of iodine.

As to the treatment of syphilis, Mr. Lowndes is an advocate of the mercurial. Hydrargyrum cum creta for internal use; mercurial inunction and mercurial vapor bath, to procure systemic action, and locally "black wash" which "still holds its own," mercurial ointment, and iodoform—the unpleasant odor of which he overcomes by adding a few grains of ground coffee. He finds inunction the most effective treatment and next in value to the vapor baths.

He has nothing to say of the hypodermatic method, nor does he allude to microbes, and the necessity of germicides.

For application to mucous patches and ulcers of the mouth, he finds nothing better than chlorate of potash, and a mixture of iodoform and starch in equal parts, blown on with an insufflator.

For the tertiary, to which he restricts it, Mr. Lowndes uses the iodide of potassium. The addition of acetate of potassium—fifteen grains to each dose—he finds permits the iodide to be used with much less irritation. The alternate—week by week—use of iodide of iron is very effectual for the relief of tertiary when there is much depression of the vital forces.

ANTIPYRIN IN WHOOPING-COUGH.

DR. DUBOUSQUET-LABORDIERE finds that antipyrin is an efficient remedy for whooping-cough (*Revue Gén. de Thérapeutique*, May 15, 1888). He concludes a clinical paper on this topic with the following:

1. Children take antipyrin without difficulty, and they easily bear its effects, as a rule.

2. The spasmodic condition is rapidly calmed, and in a few days the disease declines.

3. Its action is so prompt and so free from accidents, that it becomes a valuable remedy for a malady which may be very prolonged in duration, and have many complications.

ANTIPYRIN VERSUS ANALGESINE.

At a recent session of the French Academy (*Revue de Thérap.*, May 15, 1888), M. BOURGOUIN proposed substituting the word *analgesine* for *antipyrin*, on the ground that the latter is not a succedaneum for quinine, and is a pain reliever. Dujardin-Beaumetz opposed the suggestion on the ground that, the name antipyrin having come into universal use, to change to analgesine would cause confusion.

SALICYLATE OF SODA IN ALBUMINURIA.

JACCOUD (*Revue de Thérapeutique*, May 15, 1888) advises caution in the use of salicylate of sodium in cases of albuminuria. He finds that five grammes (eighty grains) in twenty-four hours suffice in cases of acute rheumatism.

When albuminuria appears, he stops the administration of the remedy; and also in fevers, should albuminuria occur, the salicylate is discontinued, and, in place of it, he gives the bromhydrate of quinine.

FOR NASAL CATARRH.

R.—Chloral. hydrat. gr. x.
 Acid. boric. 3ij.
 Glycerini,
 Aquæ laur. ceras. āā 3j.
 Aquæ 3vj.—M.
 Sig.—Apply locally.

“MAGIC CREAM” (LOWNDES).

R.—Hydrarg. ammoniat. 1 part.
 Zinci oxidi 3 parts.

Must be thoroughly incorporated in powder, sufficient glycerine and lard then added to make a stiff cream. For application to venereal ulcers.

The same can be extemporaneously prepared by mixing one part of the ammoniated mercury ointment with three parts of zinc ointment, and a little glycerine added.

MENTHOL PLASTER.

Lead plaster 75 parts.
 Yellow wax 10 parts.
 Resin 5 parts.

Melt the resin, and thoroughly incorporate with it—Menthol, 10 parts.

MEDICINE.

UNDER THE CHARGE OF

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TYPHOID FEVER IN CHILDREN.

In a clinical lecture on this subject, FORCHHEIMER (*New Orleans Med. and Surg. Journal*, April, 1888) emphasizes the fact that the disease in children almost always begins suddenly. The child will be playing about in the morning, languid in the evening, and quite ill by the next day. Insomnia is frequent at night, often alternating with drowsiness during the day. Iliac ten-

derness will be elicited on deep pressure. Epistaxis occurred in only five per cent. of seventy cases which he has recently treated, though in some epidemics it is frequent. Sneezing is sometimes seen, contrary to Liebermeister's dogma. The tongue is as in adults. Bronchial catarrh and cough are nearly always present. Constipation is much more common than diarrhœa, which, however, usually occurs some time during the disease. Enlargement of the spleen has not the same importance as in adults, and, though generally present, may be wanting. Vomiting is very common, especially at the inception. The lesions of the bowel are much less severe than in adults, and only one of the seventy cases had hemorrhage, and none perforation. The greatest characteristic is the profound impression on the nervous system, which often persists to some extent for years. The pulse does not rise in proportion to the temperature; the heart not being severely affected. Complications are not frequent, the commonest being aphasia, of which we have no explanation. A sequela not occurring in adults is tuberculosis of the intestines, lungs, or meninges. The prognosis is very favorable, as up to the age of twelve years the mortality is hardly over five per cent. For treatment he uses the abortive method with calomel, antipyrin to lessen pain and for its antiseptic effect, absolutely liquid diet, the use of a day and a night bed, the lukewarm bath, whiskey, often dilute nitro-muriatic acid.

THE DURATION OF THE INCUBATION OF MEASLES.

LEE (*Medical Press and Circular*, 1888, xcvi. 430) reports several cases of rubecula which are interesting, since in most of them the duration of incubation could be accurately fixed. In 2 of them there was an interval of fourteen days from the day of exposure, in 1 seventeen days, in 1 eighteen days, and in 1 thirteen days.

DIPHTHERITIC INFLAMMATION OF THE THROAT IN SCARLET FEVER.

JACKSON (*Boston Med. and Surg. Journ.*, 1888, cxviii. 421) reports his experience with fifty cases of scarlet fever, which is of interest as concerns the real nature of the diphtheritic inflammation of the throat; Eichhorst regarding it as possibly true diphtheria, while Flint, Henoch, and Strümpell consider it anatomically identical, but etiologically distinct. The chief arguments used against it being diphtheria are (1) invasion of the larynx is rare; (2) paralysis seldom follows; (3) it is not so fatal as true diphtheria. The author's cases refute these claims, since one patient, and possibly two, died from invasion of the larynx; two died of paralysis of the heart after convalescence was well established; and the mortality was large—*i. e.*, four out of the eight who suffered from the inflammation of the throat.

HYSTERICAL FEVER.

Under this title BRESSLER (*Med. Record*, 1888, 33, 466) calls attention to an affection which is not, he says, described by authors generally, but of which he has seen a number of cases; namely, an elevation of temperature lasting from a few hours to several weeks, sometimes with intermissions, occurring in neurotic individuals, and associated with symptoms of a hysterical

character. We know nothing as to its anatomical changes; these being probably the same as those which operate in hysteria, plus an influence acting on the thermic centre. The disease usually begins with chilliness, anorexia, constipation, coated tongue, headache, elevated temperature, etc. The mind is unusually bright, the special senses are acute, there is no delirium, no matter how severe the attack may be, the appetite is often perverted, the patient is irritable, and noises are often annoying and increase the fever. One of the most important symptoms is the vomiting which often persistently follows the introduction of anything into the oral cavity, and the patient will sometimes go days without tasting food through fear of this. The abdomen is extremely sensitive to pressure, but, unlike peritonitis, the pain is fluctuating and there is no tympanites, while the one is further distinguished from the other by the constant and characteristic ovarian tenderness, the variability of temperature, etc. The pulse is usually increased in frequency. Neuralgia of the bowels, insomnia, and hysterical asthma are seen exceptionally. The temperature is peculiar, generally attaining a high degree early in the disease, and continuing thus, or being subject to all sorts of sudden variations. Very little wasting of the body takes place. The treatment is the same as for hysteria, with the addition of some febrifuge; antifebrin being the most satisfactory. The patient must also be made to take food; and symptoms treated on general principles as they arise.

CONTRIBUTION TO THE PATHOLOGY AND THERAPY OF LEUKÆMIA.

In an elaborate article on this subject, in the *Zeitschrift für klinische Medizin*, 1888, xiv. 80-147, STICKER reports, in fullest detail, a fatal case which had been under observation eight months, and on whom numerous scientific studies were made; and then discusses some of the symptoms of the disease. We may note that as regards the blood the case teaches that the increase or decrease in the number of the white blood-cells keeps pace with changes in the symptoms, except the constant growth of the spleen; or rather precedes them somewhat. This case further shows the greatest number of white blood-cells yet reported; equalling at one time 3,743,000, or a proportion of 1 : 0.5. The smallest number of red blood-cells in leukæmia is reported in a patient of Sorensen and Quincke, and equalled 500,000 in the cubic millimetre. The case of Sticker also confirms the statement that the number of the white blood-cells increases, as that of the red diminishes; and disputes the oft-repeated claim that there exists a diminution in the volume of the blood. There is rather a hydræmic plethora. The frequency of the pulse and of the respiration appeared to be nearly independent of the general condition of the patient. Toward the last there existed an abundant bronchial catarrh, which was found to consist almost entirely of the "eosinophilous" cells; while, at the same time, the number of white blood-cells was found to have diminished decidedly, and it is almost certain that they were eliminated by the bronchial tubes. Priapism was present, as in many cases, but had certainly nothing to do with the genital function. There was found no fatty degeneration of the organs, in contradistinction to anæmia; confirming Cohnheim's statement. The retinal changes, which were extensive, are detailed at length. Late in the affection there was disease of the labyrinth of the ear.

The author made an elaborate investigation into the metabolism in his

case, as shown by the analysis of the urine, and found that during the whole eight months it was abnormally great, and increased with the growing cachexia. Urea and uric acid were always in excess. The increasing number of the white blood-cells certainly has an important relation to the increased elimination of nitrogen. It is very probable that the degeneration of the liver present produced a diminution of the formation of urea, and an increase of that of uric acid; but it is certain that it was not able to paralyze the agents which would cause an augmentation of the first, and a lessening of the second. The enlargement of the spleen had nothing to do with the increased excretion of uric acid.

As concerns the therapy, the author believes that the very marked improvement, which was seen for a time, was undoubtedly due to inhalations of oxygen; a case having been also reported by Kirnberger where recovery followed this treatment. This may be by supplying oxygen to white blood-corpuses, which otherwise consume all they have before the tissues can profit by it; it having been proved that the leucæmic organism has a diminished oxidizing power. The rôle of arsenic in the therapeutics of leucæmia is not yet positively determined, and needs further study. Quebracho was of great benefit in this case in relieving the severe dyspnœa; and has been also recommended by Fleischer and Penzoldt.

A STUDY OF ARTERIAL TENSION IN NEURASTHENIA.

WEBBER (*Boston Med. and Surg. Journal*, 1888, cxviii. 441) has been making a series of studies with the sphygmograph on the condition of the bloodvessels in neurasthenia, and details a number of cases with sphygmographic tracings.

He concludes that neurasthenic patients may be divided into several classes: First, those in whom the vascular tension is nearly or quite normal. These patients are only temporarily run down, and soon recover. Second, those who, at first, show a decided loss of vascular tone, but who regain a normal tension after a course of treatment. These patients usually recover after a longer or shorter time. Third, those whose vascular tone is very much below normal, and whose tension sometimes apparently increases, and then again loses ground. These cases do not improve much, and whatever is gained is of doubtful permanency, owing to a lack of vascular stability. In a few cases the early tracings showed a nearly normal condition of the bloodvessels, but later ones were less favorable; there being always some cause to which the change could be ascribed. Some of the worst cases exhibited a great variation of tension within a few minutes. The author concludes, further, that the sphygmograph is an aid in determining the amount of exhaustion; and by comparing tracings indicates the progress toward recovery. A fictitious gain may be distinguished from a real one, since none is genuine unless the tension of the arteries is permanently restored. Tracings should be taken once in two or three weeks.

SOME CLINICAL FEATURES OF THE URIC ACID HEADACHE.

HAGG, in *St. Bartholomew's Hospital Reports*, vol. xxiii. p. 201, defines this as a headache recurring at intervals of three days to a week, or from that to

one or several months, throughout a large number of years in the life of an individual. It lasts from twelve to twenty-four hours and then goes completely away until the end of the interval. The attacks are rendered less frequent and less severe by a diet poor in nitrogen. There is often a family history of headache, or gout, or both. The author has frequently found this headache associated with a large excretion of uric acid, and has noted that the administration of an acid will stop the excessive excretion of uric acid and remove the headache in one to one and a half hours. He reports several cases in full, together with a tabular arrangement of the principal features of interest. The headache is probably caused by the action of some poison in the blood (uric acid) on a nervous (vaso-motor) system especially sensitive in some parts of the cranial circulation. Strychnine is sometimes very useful in this headache on account of its tonic action on the vaso-motor centre. Symptoms of gastro-intestinal derangement are notable by their absence. The tongue is clean, the bowels regular, food is well taken, the pulse is slow, and the temperature normal. This is in marked contrast to the frontal headache, furred tongue, fever, rapid pulse, and disgust of food, of real gastro-intestinal derangement. The sulpho-cyanide is usually in excess in these headaches occurring in gouty or rheumatic families, as Fenwick has remarked. The author then lays stress upon the alliance between these headaches and epilepsy, as illustrated by one of his cases, in which the two affections appeared to improve together under a proper diet.

THE MORTALITY OF EPILEPSY.

Doubting the truth of the general opinion that epileptics rarely die of epilepsy, WORCESTER (*Med. Record*, 1888, 33, 467) undertook some statistical investigations regarding it. For this purpose he examined the records of the Michigan Asylum for the Insane, for the last twenty-eight years, as well as those of fifty-five other asylums, fifteen of which give statistics for their entire periods of operation. The results show that from twenty per cent. to thirty per cent. of the epileptic inmates die of epilepsy, the rate being often much nearer the latter figure. This is a much larger number than the total death-rates of the individual asylums; and shows, further, that not only is epilepsy a very fatal disease, but that many more epileptics die from it than from all other causes put together.

As to whether conclusions thus drawn are applicable to patients outside of asylums, the author admits that the inmates of such institutions are probably cases of more than average severity, but claims also that they are more favorably situated as regards treatment and security against accidents; and he believes that the figures represent fairly the facts for cases of considerable severity.

NOTES ON PNEUMONIA.

WAGNER discussed some interesting points concerning pneumonia, in the *Deutsches Archiv für klinische Medicin*, B. xlii. H. 5, 1888.

I. *Relapsing pneumonia*. The difficulties connected with this subject are to determine: first, whether a relapsing pneumonia was really a true croupous affection; and second, on and after what day a relapse may take place.

The author's opinion is, that a relapse has occurred when a new infiltration of the old or of other lobes appears, with all the general and local symptoms of the disease, *at least three days* up to several weeks after the lungs in croupous pneumonia had become entirely normal, the fever had disappeared, and the patient had been completely convalescent. Relapsing pneumonia, the *pneumonia a rechute* of the French, is certainly of very rare occurrence. It develops, according to Sée, on the fifteenth or sixteenth day of the disease, and has all the symptoms of the initial attack, but lasts only two or three, or sometimes five or six days; being thus of an abortive type, like the relapse in typhoid. In about 1100 cases of pneumonia during the last ten years, Wagner has seen only three doubtless instances of it, and several doubtful ones. He also saw one case fifteen years ago, which he reports with the others. Certain conditions may be confounded with the relapsing pneumonia; among these are the pneumonia with pseudo-crises, in which the fall of temperature does not last more than a day. So, also, some cases of wandering pneumonia, and many instances of secondary bronchopneumonia, which often recur repeatedly within a short time without any known cause.

II. *The cause of contagious pneumonia.* Three years ago, the author reported a series of cases of pneumonia of a typhoid type, occurring in certain individuals from the same business house occupied in the importing of pet animals; one of which animals, at least, had died of pneumonia. Since then, he treated four other cases, three of them certainly pneumonia, the other probably so. All of these were employés in the same shop. They had the appearance of typhoid cases when first seen, and none of them had herpes.

III. *Traumatic, or walking pneumonia.* Under this heading the author describes an interesting case, in which pneumonia appeared to follow an injury, though the autopsy rendered it doubtful whether it was not an instance of "walking pneumonia," similar to walking typhoid.

THREE CASES OF DOUBLE PNEUMONIA OCCURRING SIMULTANEOUSLY IN ONE FAMILY.

These cases, reported by MATHESON (*Brooklyn Med. Journal*, 1888, 314), occurred in the persons of three brothers, aged respectively eight, six, and three and a half years. One case terminated fatally, and the autopsy revealed pus and serum in the pericardium and the right pleural cavity, and complete consolidation of the right lung. The left lung was red, swollen, inelastic, and hepatized in portions, while other parts were still aerated, but had not the appearance of lobular pneumonia. There were a few ounces of serum in the left pleura. The symptoms were those of acute lobar pneumonia, were alike in all three cases, and attacked all the boys on the same night. The disease was bilateral from the first; an unusual feature in pneumonia due to atmospheric influences. As regards the cause, there was no possibility of the action of malaria or sewer gas; if of contagious or infectious origin, there would have been a difference in the period of incubation in the three individuals; there was no indication of diphtheritic or other zymotic influence. The author believes that the irritating cause was the coal gas escaping in large quantities from an old sheet iron stove in the room.

INVESTIGATIONS ON THE MEANS OF DIFFUSION OF THE TUBERCLE BACILLUS.

CORNET (*Münchener medicinische Wochenschrift*, 1888, No. 18, 308) has experimented with the dust obtained from the walls and floors of various dwellings in which tuberculous patients had been; inoculating guinea-pigs with it, and carefully excluding all possibility of infection from outside sources. In this way twenty-one rooms of seven Berlin hospitals were examined, and bacilli found to have been present in the dust from most of them. Positive results were also obtained with the dust from insane asylums and penitentiaries. The dwellings of fifty-three tubercular patients were investigated in the same way, and the dust in the neighborhood of twenty patients found to be virulent. It was the case with absolute regularity that the dust was always virulent when the patient had been in the habit of spitting on the floor or in a handkerchief; while it was never so when a spit-cup had been employed.

The author further found that smearing of tubercular material over quite small wounds was sufficient to produce the disease. He tried the effect, too, of the different medicines recommended for the treatment of tuberculosis, but was unable to check or prevent the disease in the guinea-pigs which had been inoculated; even the sending a half dozen of them to Davos was without effect.

ON THE DETERMINATION OF THE LIMITS OF THE HEART BY PERCUSSION.

A review of the expressions of various authors, which RIESS undertakes (*Zeitschr. f. klin. Med.*, 1888, xiv. 1), shows the greatest difference in opinion with regard to the percussion boundaries of the heart; so much so that the expression "heart dulness normal" has really no significance, unless we are acquainted with the cardiac boundaries which the individual author adopts. Many writers lay stress on the difficulty or impossibility of determining the relative cardiac dulness, owing to the vibration of the sternum which percussion calls forth; and others describe special methods of investigation. Riess has found that, as a rule, no special procedure is necessary, but that with practice the determination of the actual size of the heart—i. e., the relative dulness—may be determined by simple percussion, and he has confirmed his observations by numerous post-mortem examinations. A great cause of the uncertainty in fixing the normal heart boundaries is their reference to certain variable lines: as the sternal, parasternal, and mammillary lines. The only line which remains fixed, and which can be properly used is the midsternal; the continuation of the linea alba up to the jugular fossa; and from this all lateral measurements should be made. Only in cases where the sternum is deformed, as in scoliosis, can this line not be made use of.

In order to make practical employment of the method, it was necessary to determine the distances from this base line in the normal condition; and as a result of his studies the author publishes two tables, each containing 100 cases, with measurements made on this principle. All were on males from twenty to forty years of age, who were healthy so far as the heart was concerned. The tables show a great uniformity in the measurements of the different cases; the averages being as follows:

Distance from the jugular fossæ, $2\frac{1}{2}$ inches.

Distance from the middle line—

In 3d intercostal space,	{ right	.	.	.	.	1.1 inches.
	{ left	.	.	.	.	1.9 "
In 4th intercostal space,	{ right	.	.	.	.	1.4 "
	{ left	.	.	.	.	2.9 "

These measurements agree fairly well with the few published ones made on the same plan, though the actual breadth of the relative heart dulness is somewhat less than certain authors have given it. To determine the relative dulness the percussion should simply be stronger than that used for the absolute dulness; but never need be painful, even to sensitive patients.

THE CHEMICAL DIAGNOSIS OF DISEASES OF THE STOMACH.

KLEMPERER (*Zeitschr. f. klin. Med.*, 1888, xiv. 147-170) contributes a very valuable critical and experimental paper, tending to clear away some of the confusion and contradiction surrounding this subject. None of the color reactions recommended are superior to methyl-violet; hence their value as tests for free HCl in the gastric secretion will stand or fall with it. Authors were generally agreed that it was conclusive, and Riegel's rich experience seemed to place it beyond doubt, until Cahn and v. Mering, after careful experiments, showed not only that neutral solutions, as well as free hydrochloric acid, could turn methyl-violet blue, but that the reaction might be absent in the presence of the free acid. They found that on adding the acid to carcinomatous secretion, already containing a certain amount of it, methyl-violet still failed to become blue. It was evident that free acid was present; and the failure of the test they attributed to the presence of large amounts of peptone. Honigsmann and Noorden showed, however, that it was not the presence of peptone which interfered with the reaction. They claimed that the added acid was taken into combination by substances present in the carcinomatous juice. This does not seem satisfactory to Klemperer, who could rather believe that it replaces the organic acids in combinations with bases. This substitution takes place, however, in secretions which are not carcinomatous; and, besides this, investigations which the author has carried out prove that in those which are, there is comparatively little of the organic acids. The contradiction, therefore, remained unexplained, that the gastric secretion in many cases, especially of carcinoma, may contain HCl, and yet not show the HCl reaction.

Klemperer details some experiments which he made in order to remove these contradictions, and to determine the actual value of the methyl-violet test. He assumes that the bluing, when it does occur, is really due to the presence of the acid, since other substances, which have been found capable of producing it, are never present in the stomach in sufficient concentration to give any reaction. As regards the question whether the absence of the bluing proves the lack of free HCl, he says that the union of this amido substance—methyl-violet—with HCl is one of the weakest, and that all the organic bases of whatever sort have a greater affinity for the acid than it has. Even those which are so weakly alkaline that they give no reaction with litmus, will prevent the bluing of the methyl-violet. The ptomaines are to be counted

among these, and the author has isolated that produced by the lactic acid bacillus, and finds that it will break up or prevent the union of the acid with the methyl-violet; as will also peptotoxin, which is formed when albumen is digested. The conclusion is, that bluing of methyl-violet occurs when the HCl is not united with other organic or inorganic bases.

The author then reports some experiments which show that the "exact methods" hitherto employed, including that of Cahn and von Mering, for the determination of *free* HCl, do not distinguish it from that in combination with organic bases; while the methyl-violet reaction *only* occurs when the acid is absolutely free. The contradictions in the literature become, therefore, readily explainable if we remember that there is a difference between the *secretion* and the *presence* of free HCl; and that there are numerous weakly basic substances produced by the presence of albumen, or of mucin in the stomach, or by the action of bacteria there which unite with the acid; and that we can only be certain that the HCl is in a free state—and consequently is capable of digesting—when it gives the reaction with methyl-violet.

The greatest practical question is whether the failure of the HCl test is pathognomonic of carcinoma. It is true that the reaction is seldom present in this disease, yet it is doubtful whether the acid is even diminished in quantity, and sometimes it may be increased; being combined with organic bases. The persistence of the violet color, though supporting a diagnosis of carcinoma, cannot be considered as decisive, especially when the disease is to be distinguished from motor insufficiency with or without dilatation, or from certain catarrhal conditions; since Klemperer has seen instances of these affections, as have other writers, in which no bluing of the reagent took place. The value, then, of this test is not so much in the diagnosis of any particular anatomical change, as a proof of the absence of HCl, and as a therapeutical indication.

PARALYSIS IN DYSENTERY.

The following is an abstract of the conclusions drawn by PUGIBET (*Revue de Méd.*, 1888, 296) in an elaborate study of this subject, based on a tabular collection of his own cases and of others taken from the literature: 1. Dysentery of hot countries may produce various nervous troubles, especially paralysis. 2. Contrary to the general opinion, paraplegia is not the form peculiar to dysentery and diarrhœa; but in both affections the most diverse forms of nervous trouble may be observed. 3. Dysenteric paralyzes have often a sudden and nocturnal onset without icterus, are generally incomplete, advance rapidly, terminate rather frequently in complete recovery, sometimes last through life, rarely are fatal. 4. The nervous affection, usually symmetrical, may attack the motor, sensory, or mixed nerves; or even determine a temporary glycosuria. 5. The muscles are attacked in a very capricious manner. 6. The sensibility may be involved, but is often intact; the electrical contractility is normal or slightly diminished. 7. The paralyzes are not simply functional, but due probably to lesions in the anterior horns. 8. The lesion is probably a capillary thrombosis producing atrophy of the nerve cells. 9. The prognosis of the paralysis is usually good; but that of the case in general is grave, since the nervous lesions occur only in the most debilitated patients. 10. Dysentery of hot countries is often complicated by malarial

fever or cachexia. 11. Treatment is determined by the general condition of the subject and by the nature of previous maladies.

INTUSSUSCEPTION RELIEVED BY HYDROSTATIC PRESSURE.

BUTLER (*Brooklyn Med. Journal*, 1888, 111) reports a case in a child of three years, with constipation, tenesmus, slightly stercoraceous vomiting, cool and moist skin, anxious expression, and a distended abdomen with a localized sense of resistance, which was painful on pressure. The child was placed on its face in the mother's lap and received an injection of about thirty-five ounces of tepid water. It was then laid upon its left side, slept for six hours, then voided the injection with a little fecal matter, suffered no longer from pain and vomiting, and on the next day had a copious natural movement and was well. The case shows the possibility of making an early diagnosis, and of an easy and complete reduction depending upon this.

HÆMATURIA SIMPLEX IN A NEWBORN CHILD.

MOYER (*Chicago Med. Journ. and Exam.*, 1888, 271) reports a case of hæmaturia occurring in a small and delicate child; one of twins. The bloody urine appeared with the first evacuation of the bladder after birth, and continued until the seventh day. There were no other symptoms except mild icterus on the fifth day. Looking into the literature of the subject, the author can find very few cases recorded, and usually no reference made to the matter, though Goodhardt has something to say about it. Nephritis, stone, cancer, tuberculosis, etc., are unfortunately the most common causes of the affection, but it is well to remember that there may be a *hæmaturia simplex*.

SURGERY.

UNDER THE CHARGE OF

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PULMONARY SURGERY.

L. H. PETIT summarizes in *L'Union Médicale* the discussion in the French Congress of Surgeons upon the subject of the resection of ribs in chronic empyema. Bouilly divides into five classes the cases in which such operations are to be considered: 1st, large cavities in which the lung, fastened to the vertebral column by thick false membrane, is entirely and permanently collapsed. In these cases the operation is useless and dangerous; 2d, large cavities in which the lung though condensed still preserves a slight vesicular murmur; intervention is then sometimes useful, particularly in young patients, and when the cavity does not extend beyond the third rib; 3d, cavities from

eight to twelve centimetres in diameter; these are those which present the most favorable conditions for cure; 4th, simply fistulous tracts of greater or less length; if they are short and straight the results will probably be good; the prognosis becomes less favorable when the fistulæ are long and tortuous; 5th, cases in which there are moderate-sized cavities with fistulous tracts communicating with them; in these the prognosis is favorable.

The surgeons who took part in the discussion agreed that the age of the patient is of great importance, not only as to the immediate result, but also as to the sequelæ of the operation. Children recover much more rapidly than adults or old persons, because the lung has more power of expansion and the ribs more chances of reproduction. OLLIER has pointed out two dangers in this connection: if the ribs are resected too near their anterior extremities their later development is interfered with, and great thoracic deformity may be produced. If the resection is subperiosteal, the great osteogenetic tendency of children, increased by the chronic inflammation, produces hyperostoses which may necessitate secondary resection; Leverat and Lyon have observed such cases. If, therefore, the subperiosteal method of operating is selected, which is really the easiest, it is well afterward to remove the periosteum itself. Large cavities were thought by everyone to offer a contraindication to the operation, but for various reasons LE FORT thought that the ill success in these cases was due to the prolonged drainage often used and the great retraction of the lung. BOUILLY refers it to the state of the pleural wall, which, if it is thick and hardened, should be resected. DELORMÉ referred especially to tuberculous infiltration of the wall of the cavity the nodules escaping the knife or curette of the operator, and to the diverticula which form secondary cavities under the diaphragm, or between the lobes of the lung. KIRMISSON mentioned a case in which several operations had been unsuccessful on account of the high position of the cavity and of the extremity of the fistulous tract, which involved the summit of the lung.

The operative method should consist essentially in making a vertical incision, following as nearly as possible the greatest diameter of the cavity and the direction of the fistulous tract and removing freely portions of the ribs. The amount removed is determined largely by the dimensions of the cavity; according to THIRIAR, it is better to take away two ribs too many than one too few. It should be noted that, although BÆCKEL and BOUILLY insisted upon the above point, and attributed a want of success of their first operations to the timidity with which they practised their resections, the rule does not apply equally to the upper and lower ribs, the former yielding much less after operation, and, therefore, producing a much less proportionate diminution in the size of the cavity. Resection of the first rib is particularly useless and dangerous. Resection of the middle ribs has a special danger to which BERGER called attention, he having lost a patient after removing portions of the seventh, eighth, and ninth ribs, the operation being followed by great dyspnoea and death within four hours. He attributed this result to the interference with the mechanical functions of the thorax, due to the loss of the point of support given by these ribs to the diaphragm. *Raclage* of the wall of the cavity should be as complete as possible, and it should be washed afterward with a ten per cent. solution of chloride of zinc. Disinfection of the cavity is a necessary condition to success, although free washing was not ap-

proved by all speakers. THIRIAR does not employ it, and LE FORT attributed to pleural injections the fatal syncope which occurred in one of his patients. Thirty-two cures were reported out of the total number of forty-nine cases operated upon.

[In a paper published in 1884 by DR. BRUEN, of Philadelphia, and the writer, the following rules for this operation were formulated :

1. The portions of the ribs removed should be those between their angles and their sternal attachments. Posterior to this they are less movable, and are so close together that the difficulties of the operation are greatly increased.

2. Those ribs between the third and tenth should be selected which most accurately overlie the cavity.

3. The number of ribs operated upon should be proportionate to the extent of the cavity.

4. The length of the pieces excised should be proportionate to the depth of the cavity.

5. The operation should be done aseptically and subperiosteally, and when so performed is almost without danger; and even in cases where large portions of ribs are removed is followed by no permanent loss of function in the external respiratory muscles of that side.

The general conclusions at which we thus arrived, based upon the study of the literature of the subject, and upon our experience with thirteen cases of empyema treated in the University and Philadelphia Hospitals, were as follows :

1. Those cases of pleural effusion which are most likely to become purulent, and, therefore, to need operative treatment, are those occurring in persons of lowered vitality, scrofulous diathesis, or who suffer from intercurrent disease.

2. The diagnosis of empyema can only be made with absolute certainty by puncture and inspection of the fluid. This method of examination need not be delayed for fear of favoring the purulent transformation of a serous fluid, if proper aseptic precautions are observed.

3. In young children, one or two aspirations will often suffice for a cure. If these fail, simple incision of the chest without the introduction of the drainage tube is often all that is requisite.

4. In older children and in adults, it is proper to aspirate once; but recovery not resulting promptly, a large drainage tube should be inserted at the most dependent point.

5. If, after this, drainage is still imperfect, as shown by the fetid character of the discharge, a second opening should be made, and a tube carried directly across the base of the cavity.

6. If, after a suitable delay (from two to four months), there is no disposition to permanent closure of the suppurating cavity, but if the lung has expanded sufficiently to indicate that it is capable of further descent, it would then be proper to facilitate its expansion and the obliteration of the cavity, by removing certain portions of the affected side.

7. If thorough drainage is accomplished, the use of disinfectants by intrathoracic injections is rendered unnecessary, unless a stimulant to the granulating surface is required.

8. In cases in which the lung is at the bottom of the chest, and bound fast

to the diaphragm, or in which it has been so atrophied prior to aspiration that there is no possibility of reinflation, or in which it is occupied by a tuberculous or an inflammatory infiltration, this operation is contraindicated.]

FOUBET (*Archives Gén. de Méd.*, Oct. 1887) has reported the results of 80 operations upon the lungs. In 7 cases of tuberculous cavities, in which an incision was made either with or without resection of the ribs, there were 5 deaths, 1 alleged recovery, and 1 case in which life was prolonged. In 14 cases of abscess of the lungs, there were 9 cures, and 5 deaths; in 18 cases of gangrene of the lung, there were 7 deaths, 9 cures, and 2 cases reported as improved; in 12 cases of bronchiectasis, there were 4 cures; in 29 of the successful cases the indication for operation was the presence of hydatids.

MR. A. PEARCE GOULD (*The Lancet*, Feb. 11, 1888) reports 4 cases of Oestlander's operation for thoracoplasty, in three of which the patients were remarkably improved, the last one dying suddenly the day after the operation. Mr. Gould calls especial attention to the following points:

1. Carefully explore the cavity to be treated either before the operation, or as a first step in it. All the ribs lying in the wall of the empyema must be excised; the surgeon must, therefore, begin by determining the vertical and the antero-posterior extent of the cavity. This may be done by enlarging the fistulæ, and opening and passing in the finger.

2. A single vertical incision is all that is necessary, and should extend through the skin and muscles down to the rib. When the cavity extends far back toward the spine, it will be found convenient, after removing the front portion of the rib in the usual way, to remove the posterior part from the inside, peeling the thickened periosteum off the bone, and applying the cutting forceps from within the chest.

3. When the ribs are lined, as is often the case, by dense cicatricial tissue for an inch or more in thickness, this, too, must be entirely cut away with scissors. Mr. Gould believes that full success is only to be anticipated where all physical obstacles to the entire obliteration of the cavity have been removed. The sooner it is carried out the better, for marked exhaustion or serious visceral disease renders the operation too dangerous to be recommended.

RECTAL INSUFFLATION OF HYDROGEN GAS IN THE DIAGNOSIS OF INTESTINAL WOUNDS.

DR. N. SENN, in a remarkable paper on the above subject (*The Medical News*, May 26, 1888), comes to the following conclusions:

1. The entire alimentary canal is permeable to rectal insufflation of air or gas.

2. Inflation of the entire alimentary canal, from above downward, through a stomach tube rarely succeeds, and should, therefore, be resorted to only in demonstrating the presence of a perforation or wound of the stomach, and for locating other lesions in the organ or its immediate vicinity.

3. The ileo-cæcal valve is rendered incompetent and permeable by rectal insufflation of air or gas, under a pressure varying from one-fourth of a pound to two pounds.

4. Air or gas can be forced through the whole alimentary canal, from anus

to mouth, under a pressure varying from one-third of a pound to two and a half pounds.

5. Rectal insufflation of air or gas, to be both safe and effective, must be done very slowly and continuously.

6. The safest and most effective rectal insufflator is a rubber balloon, large enough to hold four gallons of air or gas.

7. Hydrogen gas should be preferred to atmospheric air or other gas, for purposes of inflation in all cases where the procedure is indicated.

8. The resisting power of the intestinal wall is nearly the same throughout the entire length of the canal, and, in a normal condition, yields to a diastaltic force of from eight to twelve pounds. When rupture takes place, it either occurs as a longitudinal laceration of the peritoneum on the visceral surface of the bowel, or as multiple ruptures from within outward at the mesenteric attachment.

9. Hydrogen gas is devoid of toxic properties, non-irritating when brought in contact with living tissues, and is rapidly absorbed from the connective tissue spaces, and all of the large serous cavities.

10. The escape of air or gas through the ileo-cæcal valve, from below upward, is always attended by a blowing or gurgling sound, heard most distinctly over the ileo-cæcal region, and by a sudden diminution of pressure.

THE INFLUENCE OF THE KIDNEY IN PRODUCING VESICAL SYMPTOMS.

M. GUYON reports (*Annales des Maladies des Org. Gen.-Urin.*, April, 1888) an interesting case of a patient, forty-two years of age, with a history of repeated attacks of nephritic colic, and of three lithotripsies, all of which he had borne well. In August, 1887, he was attacked with sharp pain in the region of the right kidney, and afterward with a series of nephritic colics; the renal pain increased; he walked bent almost double, and finally developed increasing and urgent frequency of urination both by day and night.

On his admission to the hospital he urinated every four or five minutes, and urination was accompanied by sharp vesical pains. The pain began before the beginning of urination, and was severe again at the end of the act. In December the urine became bloody and remained so. There was little or no pus in the urine. Rectal examination disclosed a hard mass at the vesical end of the right ureter. There was no true cystitis. Treatment of various kinds gave no relief. The patient died on December 23d. The autopsy disclosed inflammatory lesions of the end of the ureter, renal calculi, dilatation of the right kidney, and disappearance of the cortical substance.

IMPERFORATE ANUS WITH RECTAL DIVERTICULUM.

DR. HILDEBRANDT (*Deutsch. Zeitschr. für Chirurgie*, Feb. 1888) reports a case of imperforate anus and rectal diverticulum. The anal point was marked by a few folds of skin, through which the sphincter could be felt. An exploratory incision was made, but without result, as there was no indication of a rectum. An artificial anus was then made in the left iliac region. An enormously distended gut was found, stitched to the belly wall and incised. The patient was a boy baby, three days old. He was brought back in seven weeks, with a well-marked diverticulum beginning at the lower end of the

descending colon, at the seat of the artificial anus. It was ligatured and cut off, and measured fourteen centimetres in length.

OPEN INCISION IN WRY NECK, CONTRACTED KNEE, AND TALIPES VARUS.

DR. E. H. BRADFORD reports (*Boston Med. and Surg. Journal*, March 22, 1888) the case of a boy aged eleven years, with anterior torticollis. A free incision was made about one and one-half inches above the clavicle for the entire width of the insertion of the sterno-mastoid; the belly of the muscle was thoroughly divided, as well as some contracted fascia beneath the muscle. In a second case, in a girl aged fourteen years, the same operation was performed. In both, the wound healed by first intention, and the results were entirely satisfactory. The advantages of subcutaneous tenotomy in these cases are the absence of scar and the lessened danger of the operation; the disadvantages are, the difficulty of dividing thoroughly all the fibres of the fascia, and, in case of imperfect division, the danger of wounding important vessels, which results from an attempt to make deeper incisions.

In the open method, the surgeon can clearly view before dividing the resisting point. If the operation is aseptic the scar is very slight, and there is no suppuration. The incision may be made in the hollow above the clavicle, and parallel with it, leaving a linear cicatrix, which is scarcely noticeable. The thoroughness of the division of the contracted parts lessens the time required for mechanical after-treatment.

Dr. Bradford also reports successful cases of resistant club-foot, and of spastic paralysis with contraction of the hamstrings, successfully treated by open incisions.

RECTAL CARCINOMA.

DR. OTTO HILDEBRAND (*Deutsche Zeitschrift für Chirurgie*, Feb. 1888), writing on the subject of statistics of rectal carcinoma, asserts that no special cancer microbe has yet been discovered. He knows of no satisfactory way of accounting for the great frequency of intestinal cancer at the lower end of the bowel. He does not think that hemorrhoids and the irritation of fecal matter can act as etiological factors. The large majority of cases occur among persons from fifty to seventy years of age, though Czerny observed a rectal cancer in a girl of nineteen which was so extensive that an operation was impossible. It affects almost twice as many men as women. In 187 cases of Billroth, Fischer, Kocher, Czerny, and König, 123 were men and only 64 women. In very many of these cases the carcinoma was annular, a small number were flat, and in several instances they formed tumors projecting into the calibre of the gut. In many cases the peri-rectal lymphatic vessels and glands were involved. Of 69 cases, 15 were too far advanced for operation. Of the 54 operated upon, there was a failure to remove the entire mass in 13. He concludes that half the cases operated upon had an involvement of the lymphatic glands, and that rectal carcinoma is relatively less malignant than mammary cancer. He takes exception to Winiwarter's statement that the inguinal glands are primarily affected as he has observed them once so only, though he has frequently seen the rectal glands affected. Henke also contradicts Winiwarter. Of the cases cited 10 were

metastatic; deposits were found as follows: in the liver 7, spleen, kidneys, lungs, ovaries, each 2, mediastinal glands, ileum, pylorus, and skin, each 1 case. Excision should be invariably practised as the only remedial measure, except when there is no promise of a successful healing. Proper preparation is important, and this consists mainly in emptying the bowel. It is very important to avoid irritation of the wound by early evacuations or desire to go to stool. In cases of extensive involvement of the bowel extending upward from the anal margin, it is best to excise the coccyx, thus affording more room for injection and operation. In some cases adherent peritoneum was excised while in many others it was extensively pulled off the growth. Wounds of the peritoneum were immediately sutured, a drainage tube being introduced in the intestine. It was considered very important to keep the patient in a half sitting position after the operation. The neck of the bladder was wounded three times and the seminal vessels and prostate each once. Wounding of the urethra was treated successfully by retaining a catheter in the urethral canal. Wounds of the neck of the bladder were treated by suturing the vesical mucous membrane to the external wound. All accessible glands were removed in every case, and at the end of the removal the gut was drawn down and united to the external wound. Care was always taken to have a circular union of the skin and mucous membrane. The median incisions were, as a rule, not sutured so as to prevent a retention of excretions. König prefers union at once with deep sutures.

In 57 operations death resulted as follows:

1. Collapse	4
2. Septic infection	10
3. Fatty heart	2
4. Perforating peritonitis not due to the operation	1
5. Unknown causes (no infection, no loss of blood)	3
	<hr/>
	20

He ascribes the increased success in these cases during the last few years to the introduction of iodoform dressings. Tabulated statistics are given to show that in a proportion of cases good function of the bowel may result after the operation, and that it is likely to improve with time. He concluded that the results that usually follow excision do not form a pleasant picture; that the mortality of the operation is still high; that definite healing is a rather rare occurrence; and that the function after the operation is, as a rule, imperfect. More care should be exercised in the selection of cases for operation.

TREATMENT OF FRACTURE OF THE PATELLA.

PROF. ANTONIO CECI (*Deutsch. Zeit. für Chirurg.*, Feb. 1888) details as follows the various methods of treatment of patellar fracture:

1. The use of Malgaigne's hooks, which, he thinks, is mistakenly considered as among the bloodless operations.

2. The tendon suture of Volkmann (1868), which consisted in passing a silk suture through the skin and quadriceps tendon, and skin and tendo-patellæ. This is then drawn tight and tied, with the knee extended and the fragments approximated. A plaster dressing is then applied, upon the setting of which

an opening is made, and the ligature and suture cut and withdrawn. In later years Volkmann is said to have preferred a silver suture.

3. Arthrotomy and suture of the broken ends, after Lister (1876), either through a longitudinal or transverse incision, aided in old fractures by tenotomy of the quadriceps (Macewen), or by various kinds of myotomy. Or, lastly, with section and upward displacement of the tuberosity of the tibia (Bergmann), for the purpose of approximating the broken fragments.

4. Puncture of the hæmarthrosis, after Schede (1877), either alone or accompanied by washing out the joint with carbolic acid solution and subsequent massage, so as to dissolve coagula.

5. The peripatellar suture of Kocher, consisting of a silk thread passed above and below the fragments, through either a transverse or longitudinal incision (preferably the latter). The ends are drawn together and twisted over a gauze cylinder. The knot is buried in the wound, and the skin sutured over all. König does a similar operation with catgut.

6. The author's operation, consisting of a subcutaneous buried suture, demonstrated by him on the cadaver on May 25, 1887, before the Academy of Medicine at Padua, and performed on two actual cases a few days later (May 28th and 30th).

In his first paper the author claimed that his operation was indicated in new cases, that in old cases freshening of the fragments was unnecessary, that the wire probably caused a beneficial stimulus, and that it was prophylactic against recurring fracture.

In his second paper he added that his operation, being applicable at once, reduced the chances of degeneration and shortening of the quadriceps, and made it possible to secure use of the knee in six to eight days. Another advantage of his operation is that in comminuted fractures it bunches the fragments and prevents all longitudinal displacement, as the wire passes subcutaneously through the tendons above and below the patella, close to its margin. He reports five cases in detail. They were all successful. It was possible, months after the operation, distinctly to feel the line of union between the fragments, and feel the wire and knot through the skin. He exhibited his third case to the Academy at Vienna eighteen months after operation. The gait was perfect. Three of the patients were aged (69, 70, and 65 years), and in one there was a bad splintering of the lower fragment.

He claims the following advantages for his operation over all others :

1. The general applicability of his suture, no matter how great the number of fragments.

2. A mechanical union of the fragments, affording efficient and permanent resistance.

3. The subcutaneous method, and the resulting rapid and complete union of the superficial and deep soft parts, completed in from four to eight days.

4. Removal of the dressings as early as the fourth to the eighth day, after which the joint requires neither immobilization nor compression.

The practical significance of these advantages appears more plainly after consideration of the causes of impairment or loss of joint function after patellar fractures. These are divided into three categories :

1. The nature of the callous formation.

2. The fibrous growths between the ends of the fragments and the intra- and extra-articular fibrous thickenings.

3. Atrophy and impairment of function of the muscles, especially the quadriceps.

If fibrous bands curl in between the broken fragments, and thus prevent bony union, the wire suture proves sufficiently strong to hold the fragments together. This unites the patella functionally if not actually. The passive motion possible often in from four to eight days, and the active movements that the patient can begin almost at the same time, are likely to prevent intra- and extra-articular thickening. Puncture of the joint, according to Schede's method, is not necessary in this procedure, as the needle puncture admits of the exit of the blood, which can also be accelerated by massage during and after the osteograph. The same method may be employed in fractures of the olecranon, and is then simpler in its application. It is very important in this procedure to have the external wound as small as possible. Experiments on dogs have repeatedly shown that the subcutaneous metallic suture is harmless. In the third case of his five there was a second operation on the same joint, and the two subcutaneous peri-patellar wires could easily be felt, and gave rise to no inconvenience whatever. It makes little or no difference whether this operation be done immediately or some days after the injury. He believes that in cases of severe injury it is best to wait several days, so as not to aggravate the existing troubles by a possible mechanical irritation.

LUXATION OF THE FIBULA.

HIRSCHBERG (*Archiv für Klinische Chirurgie*, vol. xxxvii.) summarizes as follows the symptoms of luxation of the head of the fibula:

a. Subjective: Impossibility of walking or standing; complete extension of knee; only moderate interference with flexion; radiating pain, with numbness of the leg.

b. Objective: Widening of the knee; abnormal forward projection and arched tension of the biceps tendon in anterior luxation, spasm of the biceps in posterior luxation; slight adduction of the foot secondary to abduction of the entire fibula; absence of the head of the fibula from its proper place; the presence of the head near the ligamentum patellæ, or at the back of the tibia, at either of which places it is easily recognized by the insertion of the biceps.

The writer gives a copious bibliography of the subject.

MR. ASHLEY LEGGETT reports (*The Lancet*, March 31, 1888) the case of a patient who, while playing football, slipped, and fell with his right leg doubled underneath him, so that he sat, as it were, upon the outside of his own foot. The pain at the time, and afterward, was very severe. On examination, the head of the fibula was found to be dislocated forward, being plainly seen and felt beneath the skin. Immediately behind and above it there was a distinct hollow about an inch in diameter. The tendon of the biceps was very tense. The muscles on the upper fourth of the anterior part of the injured leg were apparently flattened, and the head of the bone was approximated to the tubercle of the tibia. During etherization, the leg being semi-flexed, the patient kicked out strongly, and the head of the bone slipped back into place. The leg was put up in plaster of Paris, which was removed in four days, there

being no effusion or swelling about the joint. The case is interesting, first, on account of its rarity (Erichsen reporting but one such case); secondly, on account of the peculiar but ready way in which it was reduced; Erichsen was unable to reduce his, owing to the tension of the biceps tendon, and a similar failure occurred in a case of Mr. Annandale's, which the writer had seen; thirdly, because the usual accident, after such falls, is subluxation of the knee-joint, with displacement of one or other of the semilunar cartilages.

ARTHRECTOMY.

DR. PAUL SENDLER reviews (*Deutsche Zeitschrift für Chirurgie*, February, 1888) the relative merits of resection and arthrectomy of the knee, holding that the preference of the day is already practically in favor of the latter. The most important point in favor of arthrectomy is, that shortening is practically excluded. In fact, he has not yet observed any even in extreme cases of ossific tuberculosis. In operating with the intention of securing ankylosis, it is generally agreed that the particular method of opening the joint is of little moment so long as the parts to be investigated are sufficiently exposed to view, but he holds that the reverse is true if motion is to be attained. If the object be to secure ankylosis, Volkmann's incision should be used, but if a false joint is to be made, he prefers König's. In these latter cases, he has seen spontaneous slight voluntary movements by the patient as early as the third week after the operation. In such instances, they continued these movements after leaving the bed, and were discharged with a very movable joint and without having been subjected to electrical treatment and massage. A longitudinal incision is preferable, it always being possible to add a transverse incision if the joint is sufficiently diseased to make this necessary and a new joint impossible. He reports in detail fifteen knee operations performed on thirteen patients during the last three years. Four of these, including one puncture, were arthrotomies, while the others were either partial or complete arthrectomies (two double) for tubercular disease. Healing, as a rule, was without reaction, and, as far as possible, union was primary. He concludes:

I. A movable joint is to be preserved: *a.* After puncture and simple arthrectomies. *b.* In all partial arthrectomies in cases of local synovial tuberculosis.

II. The attempt to preserve the mobility of a joint is justified: *a.* After arthrectomies in cases of synovial tuberculosis, if of not too high a grade and without involvement of bone. *b.* In the lighter forms of tuberculosis, even if small pieces of bone have to be removed. *c.* At least on one side where there is tuberculosis of both knees.

III. Ankylosis with the knee extended is to be attempted: *a.* In severe general synovial tuberculosis. *b.* In the grave ossific varieties.

IV. The line of incision for the opening of the joint depends upon the result desired. If mobility is to be preserved, it is necessary to select a method that will not interfere with continuous and efficient extension; but if ankylosis be desired, it is best to select that method which is most convenient in each case.

MR. H. H. CLUTTON believes (*The Lancet*, April 21, 1888) that as excisions are becoming more and more rare, surgeons should pay increased attention to the operation of arthrectomy. He strongly advocates its early performance and urges that in case of joint disease as soon as it is clearly demonstrated that the trouble has not been arrested in its progress by an apparatus which gives absolute rest, the operation of arthrectomy may be fairly looked upon as one for consideration. Doubtful cases in which it is difficult to say whether the disease is progressing or not, should, of course, be left for another month or two until it appears probable that recovery by rest alone is not likely to ensue for any considerable length of time. He does not believe that we ought ever to attempt to obtain a movable joint, but ought rather to aim at procuring just such a condition of the articulation as is seen in spontaneous recovery after perfect rest—*i. e.*, freedom from pain and tenderness, absence of all swelling, and, as a general rule, ankylosis. You thus obtain the same result in as many months as it would otherwise take years to accomplish, and, moreover, very materially lessen the chances of a subsequent excision. In performing the operation, the joint being widely opened all the synovial membrane which is obviously diseased is removed with scissors or a scalpel. As a general rule, there is a very distinct interval between the gelatinous synovial membrane and the capsule, which serves as a guide to the operator during this dissection. The capsule and fibrous tissue surrounding the joint is retained so that it may again be united after the operation is completed. The articular cartilages, the ligaments, and the bones are then carefully examined, and such parts as are diseased are removed by the gouge or sharp spoon. Great attention is paid to providing for perfect drainage, and to the union of all the fibrous tissues and the soft parts which have necessarily been divided. Mr. Clutton believes that by arthrectomy we can shorten many cases of joint disease by taking them in their early stages, and can often avoid the more radical and unsatisfactory method of excision.

WOUND TREATMENT.

SCHLÄCHTER (*Deutsche Zeitschrift für Chirurgie*, Feb. 1888) calls attention to the great need for absolute cleanliness in the treatment of wounds, and emphasizes the important practical point that antiseptics *without* cleanliness is not a sufficient guarantee against infection. He details the various antiseptics which have, from time to time, been advocated and then dropped out of use, and dwells upon the irritating influence upon the tissues which many of them possess.

THE TREATMENT OF GONORRHOEAL RHEUMATISM BY ELECTRICITY.

DR. PHOTIADES reports (*Gazette Hebdom. de Méd. et de Chirurg.*, May 4, 1888) a case of a man who suffered severely with synovitis, arthritis, and myositis with each successive attack of gonorrhœa. With the last one the suffering was so great that all varieties of treatment had failed. A faradic current was applied for six minutes to the knee-joint, six minutes to the hand, and four minutes to the nape of the neck. Its intensity was gradually augmented until the patient could no longer bear it. The relief was immediate

and striking, the resolving effect manifesting itself from the first moments of treatment. The exudation became absorbed, the normal contour of the parts returned, and after twenty-four seances, made during thirty-six days, the patient no longer felt any of the stiffness of the knee-joint, which had not left him since his first attack six months previously.

OTOLOGY.

UNDER THE CHARGE OF

CHARLES H. BURNETT, M.D.,

PROFESSOR OF OTOLOGY IN THE PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE, ETC.

DISEASES OF THE EAR IN GENERAL DISEASES.

Diseases of the ear are frequently dependent upon general diseases. In addition to the well-known influence of tuberculosis, eruptive fevers, syphilis, DR. WOLF (Section of Otology, Wiesbaden Congress, September, 1887) insists upon the effects of pneumonia in the production of acute otitides. Rheumatism may attack the joints of the auditory ossicles. Endocarditis, in one case observed by Wolf, produced a thrombosis in the internal auditory artery. Chlorosis, anæmia, metritis, tobacco, lead, and mercury poisoning frequently cause affections of the labyrinth.

TREATMENT OF BOILS IN THE EAR.

DR. GROSCH (*Berliner klin. Wochenschrift*, April 30, 1888) has found that a solution of acetate of alumina, one part to four of water, will act most promptly in aborting furuncles in the external auditory canal.

The canal should be filled with the above solution every hour, and a piece of cotton placed in the meatus to retain the fluid in the canal. The pain is said to be partly quelled in four hours, and entirely removed in eight hours, by this treatment.

Its action is explained thus by Dr. Grosch: The acetic acid possesses the property of distending the tissues, without destroying their continuity, and also of penetrating deeply into them. The loosening thus brought about produces the desired relief to pain by removing the pressure from the terminal nerves, and, with the disinfecting power of the solution, brings about the desired cure by destroying the elements of infection.

AURAL EPILEPSY COMPARED WITH OTHER EPILEPSIES.

M. BOUCHERON (*Société Française d'Otologie et de Laryngologie*, April 27, 1888), in presenting a paper on the above subject, characterizes this form of epilepsy as consecutive to a direct action upon the auditory nerve. He quotes Noquet, who observed a mute affected with tinnitus and epileptic attacks, who was cured by Politzer's inflation of the tympanum. In this form of epilepsy, the irritation is conveyed to the bulb, which is a true epileptogenous centre.

The latter can be excited by irritating any of the nerves communicating with the bulb, viz., the trigeminus, the pneumogastric in all its portions, and hence the variety of the origins of vertigo. Certain epilepsies can originate from compression of the cerebral convolution where the acoustic nerve originates. Epilepsy may be due to alcoholism, to the presence of ptomaines originating in the residues of nutrition, to disturbances in the secretion of urine, and to the presence of microbes. The intensity of the attack depends on the forms of excitation and the facility of excitability. Then arise phenomena of multiple irradiations of great, medium, or feeble intensity, whence come disturbed equilibration and loss of memory. There is no difference in the epileptic attack from these various causes. Diagnosis is impossible without searching for the cause, and it must be remembered that all epilepsies are symptomatic.

TUBERCULAR SYPHILIDE OF THE AURICLE.

DR. ROBERT BARCLAY, of St. Louis, Mo. (*Journal of Cutaneous and Genito-urinary Diseases*, March, 1888), gives an account of a tubercular syphilide of the auricle, becoming serpiginous, and attended with ulceration and sequestration of the cartilage of the concha, tragus, and canal. This was followed by membranous atresia and deafness, but relieved by an operation. The latter was as follows: First, an incision was made into what was supposed to be the seat of the normal meatus. This gave vent to retained sero-purulent matter, accompanied by cakes and flakes of pus, desquamated epithelium and other decomposed tissue. After cleansing and insufflation of boric acid and calendula, a tightly rolled tampon of absorbent cotton was inserted. The next day the tampon was removed, and the discharge found to be diminishing. A scalpel then was used to widen the canal in a search for the membrana tympani, which was easily found, and seen to be spotted with granulations. The next day the discharge was observed to be further diminished, the opening, however, showed a tendency to contract. Boric acid powder was insufflated, and another cotton-wool tampon inserted. Hearing for watch $\frac{1}{2}$ ft. Same conditions and treatment the next day; and for two days more. The opening showed less and less signs of contracting, but upon neglecting the treatment prescribed for him, another form of dilatation, viz., first, soft-rubber tubing, and then a section of a hard-rubber canula, was used. This seemed to promise a cure, if his habits, which were intemperate, did not interfere with his proper attention to directions.

IVORY EXOSTOSIS REMOVED FROM THE EXTERNAL AUDITORY CANAL.

MR. GEORGE STONE (*Liverpool Medico-Chirurgical Journal*) has reported the growth of an exostosis in the auditory canal, and its removal, similar to a case observed by your reporter, an account of which was presented by him at the last meeting of the American Otological Society, July, 1887.

Instead of boring these growths with several small canals and then uniting them, it has been found by your reporter (*loc. cit.*), and by Mr. Stone, that a few taps with a small chisel driven by a hammer will knock the exostosis from its attachment. When the latter is very broad, and the growth acuminate or conical, this method of cutting could not be applied to the bone, but would

be required to be applied at the apex of the cone first, and then, when it is removed, to successive lower layers of the exostosis.

TUBERCULOSIS IN THE EAR.

DR. HABERMANN has lately examined, post-mortem, eighteen ears of tuberculous subjects, in whom either otorrhœa or deafness without active discharge had been observed during life, and in nine of these he could demonstrate the presence of tuberculosis in the auditory organ. In one instance there was found in the left auditory apparatus of a child, a year and a half old, tuberculosis of the entire middle ear, extending from the isthmus of the Eustachian tube to the mastoid antrum, without perforation of the membrana tympani.

In another case of tuberculosis, in a man, thirty-eight years old, in whom tuberculosis of the ear was observed a year and a half before death, the post-mortem examination revealed extensive tuberculosis of the cochlea, in the internal auditory canal, and in the superior semicircular canal, while the other semicircular canals and the vestibule were destroyed by caries. There were signs in the labyrinth in this case of tuberculous ravages in childhood, in a measure filled up by connective tissue. There was also found a tubercle, the size of a lentil, at the mouth of the aquæductus vestibuli.—*Prager med. Wochenschrift*, March 7, 1888.

IODOL IN OTITIS MEDIA PURULENTA.

PURJESZ (*Centralblatt für die gesammte Therapie*, April, 1888) has employed iodol in eighteen cases of otitis media, some of which were chronic, and others acute, and has been well pleased with his results. In the acute forms the discharge ceased in a few days (as it does under the use of many other drugs, Rev.), and in the chronic form in a comparatively short time. The iodol was applied once daily, and, notwithstanding its slightly irritant properties, was well borne. In two cases it had to be stopped. Iodol does not seem to be nearly equal to iodoform, however, and, notwithstanding the disagreeable odor of the latter, the former will not readily supplant it.

PHOTOXYLIN SOLUTION AS A MEANS OF CLOSING PERSISTENT PERFORATIONS IN THE MEMBRANA TYMPANI.

L. GURANOWSKI (*Archiv f. Ohrenheilkunde*, Bd. 26, S. 163, 1888) has employed a twenty per cent. solution of photoxylin, in five cases of persistent perforation in the membrana tympani, to close the perforation. The ear is first syringed with a boric acid solution and then dried with absorbent cotton. Then, under good illumination of the fundus of the auditory canal, the edges of the perforation are painted with the aforesaid solution. This dries in ten minutes, leaving a pellicle over the perforation. A second application is now made toward the centre of the former perforation from the periphery, and then a third, and others, until the entire perforation is covered with a good layer of photoxylin. The next day this new membrane will be found tight, transparent, and resistant to pressure from a probe, and to inflations by the Eustachian catheter. Guranowski also has applied this solution to flabby cicatrices, which become firm, after having been movable at each act of swallowing.

THE USE OF LACTIC ACID IN CHRONIC PURULENT OTITIS MEDIA.

DR. VICTOR LANGE (*Ibid.*), encouraged by the use of lactic acid in tubercular laryngitis, has employed fifteen to thirty per cent. solutions of lactic acid in uncomplicated, chronic purulent otitis media. Stronger solutions are used as the tolerance of the ear increases. The drug is applied either on cotton pledgets soaked with the solution, or a few drops are instilled into the ear. The stronger solutions are suitable for those cases in which considerable thickening of the mucous membrane and prominent granulations are present.

The treatment is soon followed by a diminution of the secretions and a disappearance of bad odor. Small, soft, and vascular granulations shrivel very soon, but tough ones resist for some time, even concentrated solutions of lactic acid. This acid seems to possess no hæmostatic properties, nor is it adapted to the treatment of acute forms of otitis.

SURGICAL REMOVAL OF THE MALLEUS.

DR. STACKE, of Erfurt (*Archiv f. Ohrenheilkunde*, Bd. 26, S. 115), contributes the history of ten cases of this operation, the first being performed in June, 1885. This operation is indicated in two classes of ear diseases, viz.: 1. In chronic otorrhœa, from suppurative otitis media, with disease of the malleus and incus. 2. In chronic catarrh of the middle ear producing deafness.

Regarding the first group, as the author says, there can be hardly any difference of opinion. For, if the surgeon is justified in resecting a tuberculous hip-joint, excision of the hammer bone in caries of the same, is the only rational procedure.

The subsequent state of the hearing should not be considered, if the operation of excision is indicated upon surgical grounds of expediency. "Even if an ear retaining still some power of hearing, should become entirely deaf in consequence of the operation, the operation would still be justifiable on purely surgical grounds, because by the excision of a carious nidus the danger of loss of health, and life too, is removed."

The hearing, however, is often improved, because by the excision of the diseased malleus and incus, which often bind the stapes down firmly in the oval window, the stapes is freed, and its vibration with sound waves, once more permitted.

In the second class, cases of deafness and tinnitus from chronic aural catarrh without perforation and otorrhœa, the operation is undertaken simply to relieve the deafness and tinnitus. When the deafness is largely due to fixation of the malleus by adhesion at the promontory, excision will be followed by hearing of twenty to twenty-five feet for whispers. It can be set down as an axiom that in such cases, if the sound conductors and the perceptive apparatus are normal, *excision of the malleus will be followed by a hearing power of twenty-five to thirty feet for whispered words.*

We regret we cannot enter more fully into the details of the cases and the operation. Dr. Stacke's operations were performed with the patient under anesthesia. The mode of illumination is not given. In this country the electric lamp, specially arranged for the surgeon's forehead, is used, as planned and recommended by Dr. Samuel Sexton, of New York.

CASE OF THRUSH IN THE MIDDLE EAR.

PROF. VALENTIN, of Berne (*Archiv f. Ohrenheilk.*, Bd. 26, 81, Feb. 1888), reports a case of thrush in the middle ear of a girl nine years old. The same aphthous growth extended over the mucous membrane of the hard palate, nasopharynx, and Eustachian region of the affected side. Beneath these patches the mucous membrane was disposed to bleed. The nares were free. Beneath the microscope the false membrane was shown to be composed of masses of pavement epithelium, numerous cells of thrush, with characteristic mycelium.

The left ear emitted a peculiarly disagreeable odor. The auditory canal was filled with cheesy masses of the fungus, easily syringed out. The lower part of the membrane was destroyed. The fungus was found growing in the middle ear. The regrowth was obstinate on the hard palate, but disappeared entirely and permanently from the ear, under the internal administration of iodide of iron and malt, and the local use of ten per cent. solution of sulphate of copper, which Prof. Valentin prefers to alcohol or corrosive sublimate as a destroyer of fungi in the ear.

SOME RARE CASES OF DISEASE OF THE MIDDLE EAR, COMPLICATED BY INTRACRANIAL LESIONS.

DR. E. SCHMIEGELOW, of Copenhagen (*Archiv für Ohrenheilkunde*, Bd. 26, Feb. 1888), reports several cases of the above-named nature.

The *first* case was one of primary disease of the base of the skull and the brain, either hemorrhagic or neoplastic in nature. This was followed by secondary necrosis of the petrous portion and of the temporal bone, and purulent softening of the temporal lobe of the brain. Subsequently a chronic purulent otitis media became established. Acute leptomeningitis followed.

The history of the patient showed that in his work he had often received blows and knocks on the head. He had suffered for years with a chronic non-purulent otitis media. Suddenly, intense neuralgia of the trigeminus of the right side, in all three of its branches, set in. This was soon followed by facial paralysis of the same side, choked disk and optic neuritis, all showing that a lesion had occurred at the base of the brain, near the apex of the pyramid of the petrous bone. The exudation in the right ear must be regarded as the expression of a reflex neurosis from the trigeminus.

The *second* case was one of acute otitis media suppurativa, followed by pyæmia and caries of the mastoid process and endocranial abscess. The mastoid process was opened by a chisel, and recovery took place in three weeks, so as to permit the patient to attend dispensary treatment; in one year, entire recovery, with hearing for watch at nine inches, and for the voice, across a room.

The *third* case was one of acute suppurative otitis, with paralysis of the facial nerve, and marked cerebral depression. There were symptoms of mastoid retention of pus. This cavity was opened, and the transverse sinus accidentally penetrated. The patient, however, seemed to be getting well, when, on the seventh day of apparent convalescence, she fell back in bed, and, after becoming cyanotic in the face, died in a few seconds. There was no post-mortem examination.

ALTERATIONS IN THE LABYRINTH IN MEASLES.

These alterations pertain to the lymphatics and the bloodvessels. In the former, the lymph coagulates and the cells accumulate; they also fill up the semicircular canals and the cochlea. The endothelium undergoes fatty degeneration. In the bloodvessels, the destruction is nearly complete in the Haversian canals and in the spiral ligament. Hence the colloid degeneration in the marrow of the bones, and the partial neuroses. The muscles undergo waxy degeneration. The nerves become gelatinous and, at places, entirely atrophied. The cells of Corti's membrane are also similarly degenerated. Notwithstanding the intensity of these lesions, and the frequency of auditory complication in measles, permanent deafness is rare as a consequence of this disease. Reparation seems possible. (Section of Otology. PROF. S. Moos, Congress at Wiesbaden, September 22, 1887.)

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

ACUTE, INFECTIOUS, PHLEGMONOUS PHARYNGITIS.

SENATOR, of Berlin, calls attention (*Münchener med. Woch.*, Jan. 17, 1888, p. 47) under this head to a little known and dangerous fever, perhaps invariably fatal, and mentions two cases subsequently reported in detail (*Berliner Klin. Woch.*, Jan. 30, 1888) with extensions.

A metal drawer, aged thirty-six, was admitted September 28th, with tolerably high fever, disquiet, and slight disturbance of intellect. Two weeks before, he had been at home for a day or two, then thoroughly well for fourteen days, when he took cold by drinking ice-cold beer while overheated.

He complained of pain in the throat and want of breath. There was slight swelling of the throat, especially on the left side, and pain. Great congestion in mouth and pharynx. Sensorium became more and more dulled. Fever slight.

The treatment consisted in cold compresses and fragments of ice. Death ensued on the third day, without evidences of suffocation. The urine was highly albuminous, without morphotic particles, and without blood.

Section revealed suppuration in the peripharyngeal tissues around the large vessels, which reached to the upper part of the thorax; further, a very extensive gastritis and inflammation of the jejunum, a large spleen (splenic tumor), and parenchymatous nephritis. The patient died without any diagnosis.

Soon after, a second patient was observed in hospital with the same symp-

toms, and in whom the diagnosis was made as probable. He was a merchant who, after a night of dissipation, in which he had eaten ice, was first taken with the symptoms of acute gastritis and diarrhœa. There soon ensued severe pain on glutition, hoarseness, attacks of dyspnœa, swelling of the left side of the neck, with great tenderness, especially of the tonsil. The diarrhœa soon abated, but the patient's condition grew more and more serious, and he died in collapse without suffocation.

The anatomical diagnosis from the autopsy was: Deep phlegmon of the left side of the pharynx, with extension to the larynx; purulent infiltration of the left aryepiglottic fold; decubitus of both vocal bands, with commencing separation; deep-seated swelling of the gastric mucous membrane, *gastritis proliferans*; great hyperplastic and hyperæmic splenic tumor; parenchymatous nephritis; hemorrhagic myelitis. Numerous coagulation necroses in the kidneys.

Senator recalls two similar cases in his experience, and believes that he has seen several. There are a few others recorded, but they have always been regarded as acute œdema of the larynx, or as perilaryngitis. Mackenzie similarly describes this acute phlegmonous laryngitis, which he has observed chiefly in nurses, students, and physicians, who are readily septicly infected.

There is a series of analogous processes in which tissues, much better protected than the larynx or the pharynx, are primarily, though rarely, attacked with an acute suppurative inflammation, without trauma, and without metastasis. There is suppurative acute pleuritis which is soon fatal under typhoid manifestations, without any evidence being detected of a primary purulent focus anywhere; the rare cases of purulent peritonitis without origin from the genitalia, or from the bowel; acute primary osteomyelitis, perhaps, also, many cases of malignant, ulcerous endocarditis.

Senator believes all these forms in general to be less frequent than the analogous disease in the pharynx, and chiefly so in consequence of the less exposed locality of the infection.

We have here a primary pharyngitis. The other changes, extension to the larynx, splenic tumor, and nephritis, are readily explained. The gastritis only is peculiar, and it is probable that the gastritis is a result of the constitutional affection, as it sometimes is in scarlatina. Examination for bacteria has been without result. The diagnosis is easy. It is an affection associated with slight fever and disturbance of the sensorium, of which the characteristic points are pains in the throat and, later, hoarseness, dyspnœa, and dysphagia. It is distinguished from pharyngeal croup by the simultaneous manifestation of disturbance of the intellect; from Ludwig's angina, by the splenic tumor and the albuminuria. The prognosis, according to Senator's experience, is absolutely unfavorable.

In the discussion on this paper (*Deutsche med. Woch.*, Jan. 26, 1888), Guttman regarded the cases related as instances of what is tolerably well known as erysipelatous inflammation of the pharynx. Virchow mentioned that he had examined an entire series of such cases, and reported them in 1876-80. They were infectious processes which affect the pharynx, and thence the œsophagus, stomach, and intestine, and, in addition, have a strong disposition to extend from the pharynx and upper part of the œsophagus to the throat and the parts surrounding the trachea, and from the lower portion of the œsopha-

gus to the mediastinum, and thence to the pleura and the lungs. In many cases metastasis occurs to other organs. In the latter connection, cases frequently occur as the result of puerperal diseases. There is another class of cases which may be designated spontaneous, as there is no special cause that can be detected.

EXTERNAL INCISIONS IN RETROPHARYNGEAL ABSCESS.

DR. H. BURCKHARDT, of Stuttgart (*Centralblatt für Chirurgie*, January 8, 1888, p. 57), urges external incision in preference to direct incision through the mouth. The advantages claimed are the better examination of the abscess cavity, with the finger if need be. He likewise commends the incision for extraction of foreign bodies from the retropharyngeal or upper retropharyngeal space before they have produced abscesses.

An incision is made along the inner border of the sterno-mastoid muscle, through the skin and platysma, at the level of the larynx, exposing the vessels running to the thyroid gland at the level of the thyroid cartilage. These are pushed outward, and then by keeping close to the larynx, the inner circumference of the carotid artery can be readily reached in the loose connective tissue without using the knife. At this level no vessels are given off from the inner circumference of the carotid. A small opening is now to be made with the knife, deep down close to the larynx, at the lower level of the pharynx, into the thickened connective tissue surrounding the abscess, and to be dilated with a delicate dressing forceps or other similar instrument. Sometimes, a larger or smaller subcutaneous vein communicating with the vessels of the thyroid gland is found under the platysma, and this should be secured with two ligatures and be divided, before penetrating into the deep portion of the wound.

Three cases thus treated successfully are detailed, one in a servant girl twenty-nine years of age, the second in a servant girl twenty-six years of age with a splinter of glass in the abscess cavity, and the third in a male infant seven months of age.

SPONTANEOUS EXPULSION OF A LARYNGEAL POLYP.

DR. B. FRAENKEL reports (*Deutsche med. Woch.*, January 12, 1888, p. 34) a case, communicated to him by Dr. Swiderski, of Posen, of spontaneous expulsion of a polyp by cough. Hoarseness and dyspnoea began in 1862. A laryngeal polyp was detected, and von Bruns wanted to perform laryngofissure. In 1870, a serious hemorrhage occurred, and Swiderski found the larynx markedly reddened on the left side, and a pear-shaped tumor underneath the left vocal band. The hemorrhage ceased after subcutaneous injection of ergotin, but the dyspnoea remained intense. Patient refused tracheotomy. Despite topical application of silver nitrate and solutions of ergotin, the danger of suffocation was not abated. On May 12th, it was so great that tracheotomy was urgently advised, but it was declined by the patient. On May 13th, the patient was found sitting in bed, smoking his segar and taking his coffee. A severe paroxysm of cough had expelled the polyp. Microscopically it turned out to be a fibrous polyp. Despite its shrinkage from long sojourn in alcohol it was nearly three-quarters of an inch long.

Fraenkel had never observed the spontaneous expulsion of a laryngeal polyp, but had seen a case in which a laryngeal polyp had spontaneously undergone complete resorption. Such occurrences belong to the greatest rarities.

[A few instances have been noted in the compiler's practice.]

SUBHYOID CYST WITH DISPLACEMENT OF THE LARYNX.

DRS. GOUGUENHEIM and PÉRIER report (*Annales des Mal. de l'oreille et du larynx*, Avril, 1888) a case in a female, forty-eight years of age, in which the larynx was deviated to the left, and its interior altogether inaccessible to view. Preliminary tracheotomy was performed without anæsthesia, and the tumor was removed sixteen days later, the patient being discharged well four weeks after. Laryngoscopic inspection showed complete disappearance of a tumor from the right side of the larynx, and absolute integrity of the larynx. The voice had assumed its normal character.

THE ACTION OF CAUSTICS ON THE NASAL MUCOUS MEMBRANE.

DR. BOSWORTH, of New York, contends (*Journ. Lar. and Rhin.*, April, 1888) that the objective point in the treatment of hypertrophied mucous membrane should not be the destruction of tissue, but rather constriction of the blood-vessels and diminution of the nutrition, which would counteract the hypertrophy. He prefers chromic acid over all other agents for this purpose.

ACUTE TONSILLITIS.

GRIFFITHS (*Brit. Med. Journ.*, April 28) reports great success in relieving intense pain and facilitating glutton and articulation, by pencillings with a four per cent. solution of cocaine. They were repeated every two hours for five days, with permanent benefit.

AN UNUSUAL CASE OF LARYNGEAL PAPILLOMA.

VON ZIEMSEN has reported (*Münchener med. Woch.*, March 8) a case of papilloma of the larynx, of apparently five years' duration, in a male patient, fifty-seven years of age. Repeated intralaryngeal procedures, during a period of three years, having been followed by temporary improvements only, tracheotomy became necessary on account of intense stenosis from extensive papillomatous excrescences beneath and above both vocal bands. The patient died from heart failure as he was recovering from the narcosis immediately after the operation.

On section the growth had the macroscopic appearance of carcinoma, but microscopic examination showed that, instead of a carcinoma, it was a papilloma with cell-nests in the superficial portion of the mucous membrane. The histological details are given by BOLLINGER, who describes the growth as an epithelial tumor of papillary form, which, in a few points only, showed characteristics which indicated a certain malignancy. The cause of the sudden or gradual change, as may have been, of a benign growth of long standing into a malign one, was attributed to a certain depression in physiological resistance, from great age, intemperance, cardiac debility, and insufficient

nutrition, as well as to topical irritation from mechanical lesion and operative procedure. While believing this case to be an evidence of the transformation process between the benign and a malign neoplasm, Bollinger refers to the opinion of Virchow that the so-called cancer-nests may appear in benign epithelioma, although less frequently, and in more regular arrangement than in carcinomatous growths.

OBSTETRICS.

UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,
OF PHILADELPHIA.

PUERPERAL MASTITIS.

OLSHAUSEN, in the *Deutsche medicinische Wochenschrift* of April 5, 1888, contributes an article on this subject, which appears also in the most recent edition of Schröder's work.

The etiology of mastitis has become evident through bacteriological researches. The staphylococcus is the germ most frequently the infective agent, and the path of invasion is, in the greater number of cases, the milk ducts; by these avenues the various lobes and lobules are infected. Escherich and Bumm have found bacteria in the milk from lobes not yet inflamed. Bacteria also gain access readily to the breast through fissures in the nipples.

Mastitis occurring through infection of the milk ducts becomes parenchymatous; while that following fissured nipples is phlegmonous, whose causative germ is the streptococcus pyogenes. Decomposition of milk may be effected by bacteria, and the alkaline reaction be changed. Phlegmonous mastitis is characterized by diffuse inflammation of the subcutaneous tissue and extensive redness of the skin; secondarily purulent inflammation of lobules may occur.

The retention and accumulation of milk in the breast cannot cause mastitis; but the products of the decomposition of milk, lactic and butyric acids, with the formation of casein, favor the development and extension of bacteria.

In cases which do not go on to suppuration, mastitis is generally cured in two days. If fever persists for two days, suppuration has occurred; in from six to ten days, with a persistence of pain and redness, deep-seated fluctuation, and the accumulation of a large quantity of pus are found. Extensive burrowing of pus and acute pyæmia may develop. Suppuration and burrowing may persist for months, and greatly reduce the patient.

Mastitis occurs most frequently in primiparæ, 67.6 per cent. (Winckel). Among 972 patients at Halle during four years time, 31 cases of mastitis occurred, with suppuration six times.

The prophylactic treatment consists in cleansing the nipple, disinfecting all fissures about the nipple, and cleansing the child's mouth. The removal of

the child from the breast is imperative so soon as mastitis develops. In the larger number of cases, if the child be taken from the breast in the first twenty-four hours after the initial chill, the mastitis will resolve without supuration; bandaging and a laxative are also proper. Suppuration must be treated surgically, by incisions radiating from the nipple.

A subareolar mastitis, or circumscribed phlegmon, may occur without general infection of the gland. Occasionally, submammary abscess forms beneath the gland, which may lead to prolonged and dangerous infection.

CÆSAREAN SECTION AT THE ST. PETERSBURG MATERNITY.

KRASSOWSKI reports, in the *Archiv für Gynäkologie*, Band 32, Heft 2, five Porro and two Säger operations, with a maternal mortality of one, and a foetal mortality of two. The indications for operation were rupture of the uterus, tumor of the pelvis, cancer of the uterus, and contracted pelvis.

Interesting points in his technique are the use of thymol, 1 to 1000, for instruments, as carbolic acid is thought to dull cutting instruments, and biniodide of mercury, 1 to 4000, for other purposes of antiseptics. Silk was used for sutures and ligatures. The wound was hermetically sealed with collodion containing biniodide of mercury.

THE RELATIVE FREQUENCY AND CAUSES OF FŒTAL POSITIONS.

SCHÄUBLIN contributes a statistical paper to the *Archiv für Gynäkologie*, Band 32, Heft 2, in which he concludes that gravitation causes occipital presentation; that lax abdominal walls permit the child's back to turn to the mother's right side in multiparæ more often than in primiparæ; that in contracted pelvises the uterus shapes itself to accommodate the fœtus, and that the fœtal back is on the mother's left side in the proportion of 1.7 to 1 of positions on her right.

The most constant cause of anomalous positions is contracted pelvis.

PREGNANCY WITH GANGRENOUS OVARIAN CYST AND PERITONITIS; OVIOTOMY; RECOVERY.

SIPPEL describes in the *Centralblatt für Gynäkologie*, No. 14, 1888, a case of pregnancy at seven months, with ovarian cyst which became gangrenous through a twisted pedicle. Peritonitis and premature birth followed. Oviotomy was successfully done two days afterward.

Sippel noticed that, in spite of ovarian disease, uterine involution had proceeded more perfectly than usually.

A FATAL CASE OF EARLY TUBAL PREGNANCY.

The view that tubal pregnancy should be operated upon as soon as diagnosed, was strikingly illustrated by a case reported by ZUCKER (*Centralblatt für Gynäkologie*, No. 15, 1888). Two or three weeks after conception the patient had two attacks of abdominal pain, the first of which was relieved by a laxative; the second resulted in summoning Zucker.

He found the patient suffering from shock; an ill-defined, plastic mass lay

in the left parametrium, and was very sensitive. Opium and cold compresses were ordered; as the condition of collapse deepened the patient was taken to Veit's clinic (Berlin), where laparotomy was performed by VEIT ten hours after the patient was first seen.

A gallon of blood was found in the abdomen, and right tubal pregnancy with rupture. Owing to the patient's collapsed condition, the operation was rapidly done (in ten minutes); the tube was ligated and removed, and transfusion and stimulation practised, but unsuccessfully. Death occurred from hemorrhage.

Before the operation, and with the patient narcotized, no tumor could be distinctly outlined, and Zucker calls attention to the impossibility of recognizing a tumor early.

VEIT has operated ten times, on seven patients *before* hemorrhage had occurred, all of whom recovered. Of three operated on *after* hemorrhage had occurred, but one recovered.

INVOLUTION OF THE MUSCULAR TISSUE OF THE PUERPERAL UTERUS.

SÄNGER (*Beiträge zur Pathol. Anatomie*, 1887, S. 134) has examined the muscular tissue of 17 uteri, from four hours to fifty-five days after delivery. He found that the muscle fibres diminished in length and breadth, and that the process is not a fatty degeneration, but normal metabolism; fatty changes are pathological.

Subinvolution is not a disease, but a condition caused by faulty processes in the general organism. Wounds of the puerperal uterus, as in Cæsarean section, heal promptly.

THE LOWER UTERINE SEGMENT.

BLANC (*Nouvelles Archives d'Obstétrique et de Gynécologie*, No. 1, 1888) concludes a clinical study of the subject as follows: Dilatation of the cervix goes on during the five days before labor; it gradually blends with the uterine segment. The cervix remains closed until labor less often among primiparæ. The lower uterine segment extends from the contraction ring to the internal os: just before labor, the cervix enlarges, forming a secondary inferior segment separated from the primary by the adherence of the foetal membranes.

PUERPERAL SEPTICÆMIA FROM ATMOSPHERIC INFECTION.

UNDERHILL reports a case of septicæmia caused by the patient's proximity to a patient with gastric cancer. The membranes were adherent, and were removed by the hand within the uterus. The next day, an intrauterine injection of 1 to 5000 bichloride of mercury was given. The case was fatal. Also, a case of abortion at three months in a woman who had assiduously nursed a pyæmic relative. Septicæmia proved fatal in spite of antiseptic treatment. Two cases of mild septicæmia from sewer gas are added.

[In the first, attention is naturally directed to the artificial delivery of adherent membranes as the occasion of sepsis.—ED.]—*Edinburgh Medical Journal*, May, 1888.

THE ELECTRICAL TREATMENT OF EXTRAUTERINE PREGNANCY.

BROTHERS (*American Journal of Obstetrics*, May, 1888) reports a case of tubal pregnancy treated by eight applications of a strong faradic current, for fifteen minutes each, during two weeks. Cessation of symptoms; disappearance of the tumor; and, later, normal pregnancy and parturition followed.

He tabulates forty-three cases treated by electricity, most of them by faradic or galvanic currents, with two deaths. The fœtus was destroyed in all but two cases: in several, the fœtus was displaced from the tube into the uterus. In more than half, the tumor disappeared. In two cases, suppuration in the sac followed, with spontaneous evacuation and recovery.

Electrical treatment is indicated up to four months' pregnancy.

PARTURITION AMONG THE POOR.

JOHNSTON, in the *American Journal of Obstetrics* for May, 1888, reports the results of his study of 318 women at the Washington Dispensary, as follows:

Sterility is not infrequent, and dependent on anæmia. Ovarian and tubal disease, with pelvic peritonitis and cellulitis, are not common. Abortion is frequent, and results from violence. Labor is generally easy and uncomplicated. Convalescence is usually retarded by debility and work, occasionally it is very rapid.

Lactation frequently fails from maternal debility. Lesions and diseases caused by parturition are rarer and milder than in well-to-do women.

ACCIDENTS WITH BICHLORIDE OF MERCURY.

GÉHÉ, in treating a case of retained placenta after manual delivery, gave intrauterine injections of bichloride of mercury, 1 to 2000, using two catheters; well-marked intoxication with mercury followed, from which the patient made a tedious recovery.

TURGARD disinfected the uterus with bichloride solution, 1 to 3000, after abortion at six weeks. Intoxication followed, from which the patient recovered. Both patients were anæmic.—*Nouvelles Archives d'Obstétrique*, No. 4, 1888.

HYDATID CYSTS OF THE UTERUS.

PÉAN and SECHEYRON (*Archives de Tocologie*, No. 12, 1887) find that hydatids may penetrate the uterine wall, grow and rupture. They may furnish an effectual obstacle to labor, and cause uterine displacements by their weight.

Diagnosis would be based on symptoms of a tumor, and the discharge of hooklets. Treatment should be evacuation; if needed, the cervix may be split, and hæmostatic forceps employed.

THE CAUSES OF HYDRAMNIOS.

MANTEL concludes, from an elaborate study of hydramnios (*Archives de Tocologie*, Nos. 1, 2, 3, and 4, 1888), that hydramnios is acute and chronic.

The attachment of the placenta in the lower segment of the uterus, and pressure upon the placenta and cord resulting from this location, impede placental circulation, and result in accumulation of fluid in the amniotic cavity; this he considers acute hydramnios.

Chronic hydramnios is generally caused by syphilis or foetal monstrosities.

THE TREATMENT OF PREGNANCY COMPLICATED BY OVARIAN CYST.

TERRILLOX (*Archives de Tocologie*, April, 1888) concludes that in these cases ovariectomy, and not puncture of the cyst, should be performed. Ovariectomy gives the best results at three, four, or five months pregnancy; after the fifth month it is best to wait until after labor before operating. The uterus should be avoided during the operation; if wounded, it should be emptied and sutured. The technique is that ordinarily employed.

BIRTH PALSIES.

GOWERS, in a clinical lecture (*Lancet*, April 14 and 21, 1888), divides birth palsies into peripheral and cerebral. The former are usually of the facial nerve, and those of the arms; they are rarely severe, and recover spontaneously.

Cerebral palsies occur most frequently after first and difficult labors. Extravasation of blood over the cortex, or at the base of the brain, is the usual condition, resulting in death or tedious recovery.

In diagnosis, symptoms of severe injury or defective development of the nervous system are present, without history of definite onset. Chronic spinal disease is rare in children. In birth palsies, reflexes are excessive; in muscular diseases, they are not increased.

Prognosis: tendency to slow improvement. Treatment by drugs, by electricity and tenotomy is useless. Rhythmical gymnastic training, with hygiene, is of value.

RUPTURED TUBAL PREGNANCY OCCURRING TWICE IN THE SAME PATIENT.

TAIT (*British Medical Journal*, May 12, 1888) reports the case of a patient who had a ruptured tubal pregnancy of the right tube, cured by operation three years previous to writing. Normal pregnancy and parturition afterward occurred.

She then became pregnant, and at four months died of hemorrhage from ruptured tubal pregnancy of the left tube (verified by post-mortem examination).

Tait remarks that the patient, although she had passed through a similar accident, had no knowledge of her condition until rupture occurred. He has never been called to a case before rupture but once; on that occasion, positive diagnosis was not made until rupture and operation.

In the case reported, the ovum was in the left cornua of the uterus, and physical examination could not have diagnosed the abnormality before rupture.

Hysterectomy was indicated, but aid was summoned too late.

GYNECOLOGY.

 UNDER THE CHARGE OF

 HENRY C. COE, M.D., M.R.C.S.,
 OF NEW YORK.

RECTO-VAGINAL FISTULÆ.

CHROBAK (*Wiener med. Blätter*, 1887, Nos. 27-33) infers from the statistics of the Vienna Hospital that recto-vaginal fistulæ are more difficult to cure than vesico-vaginal. Out of twenty-four private patients with the former lesion, nine were operated upon, six being cured after nine operations. Among the common causes he notes the use of Zwanck's pessary, of which he strongly disapproves. One fistula that resulted from wearing this instrument was three and one-half inches in circumference.

Incontinence depends upon the shape of the opening and the amount of cicatricial contraction. Incontinence of gas may be present when there is no fistula, from traction on the sphincter by a perineal or vaginal cicatrix, and can be relieved by excision of the cicatrix. The position of the fistula is of importance; if located in the posterior fornix, or communicating with the small intestine, complete incontinence is the rule, although temporary closure may be effected by hardened feces. An opening in the thin portion of the recto-vaginal septum, if recent, may be healed by applying caustics, the rectal side of the opening having first been closed by inserting a cotton tampon into the rectum. This treatment, to be successful, must be practised early. During the last two years, the writer has operated entirely under cocaine anesthesia, injecting a five per cent. solution. His conclusions are: 1. The fistula should never be closed from the rectal side; 2. If it is confined to the recto-vaginal septum, if there is no cicatricial tissue in the rectum, and the sphincter is intact, the fistula should be closed directly from the vaginal side, providing the vagina is sufficiently capacious to allow proper room for work; 3. If the opening is low down, if there is much traction on its edges upon the rectal side, if the sphincter is wanting or incompetent, or if the vagina is too narrow to allow convenient manipulation, the septum should be split, and the case treated as one of ordinary laceration through the sphincter.

 PERITONEAL DRAINAGE BY MEANS OF IODOFORM-WICK.

PISKAČEK, assistant to Professor Breisky, of Vienna, reports (in the *Medizinische Jahrbücher der k. k. Gesellschaft der Aerzte*, 1888) a number of cases of laparotomy and vaginal hysterectomy in which this method of drainage was employed with excellent results. Drainage of the peritoneal cavity is indicated, he believes, under these circumstances: 1. In cases of extrauterine pregnancy where the sac cannot be entirely removed; 2. When after the enucleation of an intra-ligamentous cyst a large cavity is left; 3. In incomplete ovariectomy, i. e., where a portion of the sac is left behind; 4. When

numerous adhesions have been separated; 5. When pus or septic fluid has escaped into the cavity during the operation.

After reviewing the various methods of drainage, he notes the following advantages possessed by tampons of lamp-wick: The secretion is promptly removed, being more thoroughly absorbed than by iodoform-gauze, the capillary action with which is three times less than with the wick. The latter may be packed into all the recesses of the wound, so as to drain them thoroughly, which result is not attained with a stiff tube; moreover, when filled with iodoform, it can be safely left *in situ* for a considerable period, thus avoiding that disturbance of the wound and patient which is unavoidable where a tube must be constantly emptied. The patient can assume any position without fear of interfering with the drainage, and the entrance of air into the cavity is less to be feared.

To the objection urged against the wick, that it becomes engaged in the granulations within the sac, and that it is consequently difficult and dangerous to remove it, the writer replies that this is less likely to occur than when iodoform-gauze is used, and may be avoided by the exercise of proper care and gentleness. As soon as the material is saturated it should be removed, which is readily accomplished within forty-eight hours after the operation. If removed at a later period, it should be pulled out very slowly, the inner strands being first detached, then those at the periphery. In cases of vaginal extirpation of the uterus, Breisky sometimes leaves the wick in position for two weeks (!), and has never observed any intestinal or peritoneal adhesion in consequence of its prolonged contact with the parts.

The material is prepared by boiling wick in a solution of bichloride (1 to 1000), or carbolic acid (five per cent.), and then immersing it in a mixture consisting of five parts of iodoform, ten of glycerine, and seventy of alcohol. Or the wick, after being boiled, may be dipped in a ten per cent. solution of iodoform in ether. After soaking for twelve hours in either of the latter fluids, the wick is wound in balls and is kept in a glass jar.

THE TREATMENT OF VESICO-VAGINAL FISTULÆ.

HERFF (*Frauenarzt*, 1888, Heft 1) recommends the closure of the fistula by splitting the vesico-vaginal septum around the opening, doubling in the undenuded edges of the vesical and vaginal mucosa respectively, and uniting each by deep and superficial sutures. The advantages claimed for this method are:

1. It will be necessary to remove only such tissue as is actually cicatricial.
2. Large raw surfaces are brought in apposition, thus insuring reunion.
3. The opposite edges of mucous membrane fall together naturally.
4. When there is so much cicatricial tissue in the vagina that it is impossible entirely to excise it, by splitting the septum and uniting the under surface of one edge of the fistula to that of the other, the operator avoids the necessity of opposing two cicatricial edges.
5. As the resulting cicatrix is parallel to the urethra, there is not danger of contraction of the latter canal.
6. Since there is no loss of tissue, it is always possible in case of failure to operate subsequently by the usual method.

[By reference to the *Dublin Journal of Medical Sciences* for May, 1861, the reader will observe that the above description corresponds closely with that of the operation originally devised by Collis, to whom Tait (in the same journal for May, 1888) handsomely acknowledges his indebtedness. —ED.]

THE OPERATIVE TREATMENT OF DILATATION AND RELAXATION OF THE URETHRA.

ENGSTRÖM (*Berliner klin. Wochenschrift*, 1887, No. 40) reports cases of incontinence of urine, due to extreme relaxation of the urethra, in the treatment of which he practised a modification of Frank's operation. Instead of removing a wedge of tissue including the entire thickness of the urethro-vaginal septum, he left the urethral mucosa intact, aiming to obtain contraction of the urethra by the subsequent granulation. In one case, primary union occurred, in the other by granulation. The result in both instances was quite satisfactory.

SUCCESSFUL CASE OF OVARIOTOMY ON THE SECOND DAY AFTER DELIVERY.

SIPPEL (*Centralblatt für Gynäkologie*, April 7, 1888) operated upon a patient who had reached the seventh month of pregnancy with a large ovarian cyst. She was attacked with severe general pains in the abdomen, with tympanites, the temperature rising to 101.5°. At the same time, there was increased tension in the cyst. From the fact that the tenderness (originally confined to the region of the tumor) became general, and the sudden development of pain and fever, a diagnosis of torsion of the pedicle was made, and immediate interference was regarded as justifiable.

She was admitted to the hospital for the purpose of having laparotomy performed, and was delivered spontaneously the same night of a living child, the placenta following soon and the uterus contracting well without hemorrhage. It was decided to postpone the operation until involution had proceeded to some degree, in the hope that the circulation in the pedicle might be naturally reduced, but the symptoms continued to be so urgent that delay would have been fatal. Accordingly, on the morning of the second day after her delivery, the patient's abdomen was opened, the incision being extended above the umbilicus, on account of the size of the tumor. The peritoneum was thickened and congested, the intestines were deeply injected and covered with organized lymph, although not adherent, and the tumor presented a blackish appearance. The short, thick pedicle was twisted once about its axis, so that the circulation in its vessels was entirely arrested and gangrene was imminent. The patient made a rapid recovery; the temperature on the evening following the operation rose to 101.1°, then gradually fell to normal. She left her bed at the end of the second week, and was discharged on the twenty-first day, the uterus having actually undergone more rapid involution than after a normal labor.

CAVERNOUS DEGENERATION OF THE OVARIES.

Under this term, GOTTSCHALK (*Archiv für Gynäkologie*, Bd. xxxii. Heft 2) describes the condition of the ovaries in a case of which the following is a

brief history: A woman, æt. twenty-eight, who had been sterile for ten years, began to suffer from menorrhagia a year after marriage. Metrorrhagia followed and became profuse. It was several times relieved by curetting, but again recurred, so as to result in profound anæmia. No cause for the hemorrhages could be discovered. Finally, as a last resort, the uterus and ovaries were removed per vaginam, a complete cure following the operation.

The uterus was of normal size, the mucosa was not hypertrophied, and to the naked eye the organ presented no morbid changes. The ovaries were enlarged and deeply congested, as was shown on section. On microscopical examination they presented a general angiomatous structure, while the vessels of the uterine mucosa were dilated.

The writer believes that the hemorrhage would have been relieved by the removal of the appendages alone, although, since the cause was so obscure, extirpation of the uterus was justifiable under the circumstances. Theoretically, it seemed as if the congestion of the uterus might be relieved by ligating the anastomoses between the ovarian and uterine arteries, an operation which might be performed through the vagina (!), although the result would hardly be permanent; but as the ovaries were so thoroughly diseased, oöphorectomy was preferable.

It was clearly impossible to recognize cavernous degeneration of the ovaries before operation, since they were simply felt to be somewhat enlarged; however, this condition might be suspected in a case of persistent uterine hemorrhage, in which the organ was of normal size, and the curette brought away no hypertrophied tissue, while a careful examination of the pelvis failed to disclose any other cause for the symptom. It should not be forgotten that menorrhagia is a symptom of oöphoritis, but the hemorrhages are less profuse than those which attend telangiectasis of the ovaries, and in the latter condition the ovaries themselves, though enlarged, are not the seat of pain.

ASCITES AS A SYMPTOM OF TORSION OF THE PEDICLE IN CASES OF OVARIAN CYST.

SCHURINOFF (*Centralblatt für Gynäk.*, April 14, 1888) reports the following case, which, so far as he could ascertain, is unique: A peasant woman, æt. twenty-seven, had had an ovarian cyst for ten months. She was formerly in the hospital for three weeks, but declined an operation. A week before she entered the second time, ascites began to develop, and increased rapidly, so that it was necessary eventually to tap her and withdraw three gallons of fluid. Four days later, it had reaccumulated, and was again withdrawn; three days after, laparotomy was performed. A large adherent colloid cyst was found, growing from the left side, the pedicle being twisted half round its long axis. This exactly confirmed the diagnosis which was made before opening the abdomen; all other causes having been excluded, it had been decided that the ascites was due to torsion of the pedicle.

Commenting on the case, the writer thinks that the torsion must have occurred at the time when the ascites was first noted. The separate loculi of the cyst showed evidences of partial obstruction to the circulation, in the form of hemorrhages, there being, however, no signs of gangrene. The peritonitic adhesions were recent. He was unable to find any report of a similar case.

[The writer's explanation of the sudden development of ascites is by no means satisfactory. The obstruction to the circulation in the pedicle resulting from partial twisting, could hardly produce such a result, unless the vessels were of enormous size; neither would this be occasioned by a similar obstruction of those in the adhesions. If it was directly due to the accident, it must be attributed to pressure on the large systemic veins, consequent to the change in the position of the cyst.—ED.]

THE CONDITION OF THE CORPOREAL ENDOMETRIUM IN CARCINOMA OF THE CERVIX UTERI.

ABEL (*Archiv für Gynäkologie*, Bd. xxxii. Heft. 2), has made a special study of the microscopical appearances of the uterine mucosa in cases of malignant disease limited to the cervix, in order to determine its practical bearing upon the question of vaginal extirpation. The general opinion is that in the early stages of epithelioma of the cervix neither the cervical nor the corporeal endometrium is diseased; in short, the carcinoma is confined to the cervix until the parenchyma near the os internum has become involved.

Abel's observations have led him to a directly contrary conclusion. In seven uteri, removed per vaginam for epithelioma of the cervix, the corporeal endometrium was the seat of advanced changes, while the cervical was only moderately diseased. In three cases there was sarcomatous degeneration, while in the others there was present a chronic hyperplasia of the mucosa, affecting both the glands and the interglandular tissue. In every instance the microscopical appearances were strongly suggestive of round and spindle-celled sarcoma, although it could hardly be possible that a mixed growth existed (such as was described by Virchow), because the carcinomatous and quasi-sarcomatous tissues were separated by a healthy zone. It might be explained by supposing that the same cause gave rise to different morbid effects in the mucosa lining the cervix and body of the uterus.

In conclusion, the writer infers that, on anatomical as well as on clinical grounds, total extirpation of the uterus is justifiable in every case of epithelioma of the cervix.

OBSERVATIONS ON PYOSALPINX.

GUSSEROW (*Ibid.*) reports thirty-one cases of pyosalpinx in which laparotomy was performed, with one death. The symptoms are principally due, he believes, to the accompanying disease of the ovaries, which is rarely absent. The poorer class of patients, who are unable to rest, are most liable to attacks of perimetritis, which aggravate the original trouble, as shown by the presence of dysmenorrhœa. He has never observed any symptoms which he regarded as peculiar to pyosalpinx. Menorrhagia is due more often to obstruction to the pelvic circulation by old perimetritis. The danger from rupture of the tube and escape of pus into the cavity has been exaggerated. Gusserow has introduced such pus into the peritoneal cavity of a rabbit without bad results, but this proof is negative, as there may be a peculiar septic quality in some specimens of purulent matter, which is absent in others. Infection may be communicated to the contents of a pyosalpinx (previously innocuous) from a wound in the lower genital tract, resulting in

ulceration of the tube and fatal peritonitis. This accident, as well as rupture of the tube by manipulation, is less common than formerly, since we have learned to recognize the existence of pyosalpinx.

Removal of the diseased tube and ovary offers the only prospect of a radical cure. Gussierow makes as small an incision as possible, and never allows the intestines to escape. If the adhesions around the tumor cannot be broken up, aid may be afforded by pressure through the vagina, made by the finger of an assistant, or by a colpeurynter. Both ovaries should be removed, even in cases in which the disease is strictly unilateral.

In a considerable number of cases the operation is followed by para- or perimetritis, which renders it a failure, so far as regards the relief of pain; indeed, the pain may be more severe than before. Still, there is always a chance that the exudations may be absorbed, and the patient is, at least, free from the danger of rupture of the tubes, as well as from the liability to recurrent attacks of pelvic inflammation.

LAPAROTOMY FOR MYOMA OF THE UTERUS.

PROFESSOR ALBERT (*Wiener med. Presse*, April 15 and 22, 1888) reports in detail twenty cases of myomotomy with one death. His method of operation is briefly as follows: The uterus is lifted out of the cavity, and the cervix is surrounded with a rubber cord. If the bladder is drawn upward over the anterior surface of the tumor, it is not dissected off before the ligature is applied, but a pin is passed through the superficial layers of the uterine wall just above the bladder, and then the cord is made to encircle the tumor above the pin. If the tumor dips downward into Douglas's pouch, another pin is inserted in the same manner, thus avoiding the danger of applying the constriction at too low a level. The muscular tissue over the tumor is now incised, and the growth is rapidly enucleated by means of the finger, scissors, or elevator. The parietal peritoneum is united to that covering the uterus at a distance of about two-fifths of an inch below the ligature; if there is too much tension, it may be relieved by slipping the tube upward a little, or applying another just above it.

The needle first inserted serves to suspend the stump, which is formed by trimming off the mass above the ligature in the usual manner, and is treated according to the extra-peritoneal method. In no instance did necrosis of the stump attributable to the use of the rubber ligature occur; in fact, it is more likely to take place, the operator thinks, when the stump is sutured and dropped back into the cavity.

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FRANCIS B. GREENOUGH, M.D., and ABNER POST, M.D., *in Syphilis.*
OLIVER F. WADSWORTH, M.D., *in Ophthalmoscopy.*

J. ORNE GREEN, M.D., and CLARENCE J. BLAKE, M.D., *in Otolary.*
ELBRIDGE G. CUTLER, M.D., and WILLIAM W. GANNETT, M.D., *in Auscultation.*
GEORGE L. WALTON, M.D., *in Diseases of the Nervous System.*
ARTHUR T. CABOT, M.D., *in Genito-Urinary Surgery.*

Every candidate for admission not holding a degree in arts or science must pass a written examination on entrance to this School, in English, Latin, Physics, and any one of the following subjects: French, German, Elements of Algebra, or Plain Geometry, Botany. The admission examination for the coming year will be held June 23, at Boston, Exeter, Andover, New York, Philadelphia, Chicago, Cincinnati, St. Louis and San Francisco; on September 24, at Boston only.

Instruction is given by lectures, recitations, clinical teaching and practical exercises, distributed throughout the academic year. In the subjects of Anatomy, Histology, Chemistry and Pathological Anatomy, laboratory work is largely substituted for, or added to the usual methods of instruction. The year begins September 27, 1888, and ends on the last Wednesday in June, 1889, and is divided into two equal terms.

HARVARD UNIVERSITY

(CONTINUED.)

Students are divided into four classes, according to their time of study and proficiency, and during their last year will receive largely increased opportunities for instruction in the special branches mentioned. Students who began their professional studies elsewhere may be admitted to advanced standing; but all persons who apply for admission to the advanced classes must pass an examination in the branches already pursued by the class to which they seek admission.

Although the course of study recommended by the Faculty covers four years, until further notice the degree of Doctor of Medicine will continue to be given upon the completion of three years of study, to be as ample and full as heretofore. The degree of Doctor of Medicine *cum laude* will be given to candidates who have pursued a complete four years' course, and obtained an average of 75 per cent. upon all the examinations of this course. In addition to the ordinary degree of Doctor of Medicine as hitherto obtained, a certificate of attendance on the studies of the fourth year will be given to such students desiring it as shall have attended the course, and have passed a satisfactory examination in the studies of the same.

ORDER OF STUDIES.—FOUR YEARS' COURSE.

For the First Year.—Anatomy, Physiology, General Chemistry and Materia Medica.

For the Second Year.—Practical and Topographical Anatomy, Medical Chemistry, Pathological Anatomy, Clinical Medicine, Surgery, and Clinical Surgery.

For the Third Year.—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, and Clinical Surgery.

For the Fourth Year.—Ophthalmology, Otology, Dermatology, Syphilis, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Obstetrics, Clinical and Operative Obstetrics, Clinical Medicine, Clinical and Operative Surgery, Orthopedic Surgery, Forensic Medicine, Genito-Urinary Diseases, Diseases of the Rectum, Hygiene, Bacteriology, Clinical Microscopy, Exanthemata, Preparation of Food for Infants and Invalids, Vaccination.

THREE YEARS' COURSE.

For the First Year.—Anatomy, Physiology, General Chemistry and Materia Medica.

For the Second Year.—Practical and Topographical Anatomy, Medical Chemistry, Pathological Anatomy, Clinical Medicine and Clinical Surgery.

For the Third Year.—Therapeutics, Obstetrics, Theory and Practice of Medicine, Clinical Medicine, Surgery, Clinical Surgery, Ophthalmology, Dermatology, Syphilis, Otology, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Forensic Medicine.

ANNUAL EXAMINATIONS.

At the end of the First Year.—Anatomy, Physiology, General Chemistry and Materia Medica.

End of Second Year.—Topographical Anatomy, Medical Chemistry and Pathological Anatomy.

End of Third Year.—Therapeutics, Obstetrics, Theory and Practice of Medicine, Surgery. (Students of the three years' course are also examined in Clinical Medicine and Clinical Surgery.)

End of Fourth Year.—Ophthalmology, Otology, Dermatology, Syphilis, Laryngology, Mental Diseases, Diseases of the Nervous System, Diseases of Women, Diseases of Children, Obstetrics, Clinical Obstetrics, Clinical Medicine, Clinical Surgery, Forensic Medicine.

REQUIREMENTS FOR A DEGREE.—Every candidate must be twenty-one years of age; must have studied medicine three or four full years; have spent at least one continuous year at this School; have passed a written examination upon all the prescribed studies of the course taken.

COURSE FOR GRADUATES.—For the purpose of affording to those already Graduates of Medicine additional facilities for pursuing clinical, laboratory and other studies, the Faculty has established a course which comprises all of the special subjects of the fourth year in addition to private instruction in Anatomy, Histology, Physiology, Medical Chemistry, Pathological Anatomy and Bacteriology. Graduates of other Medical Schools who may desire to obtain the degree of M. D. at this University, will be admitted to examination for this degree after a year's study in the Graduates' Course.

FEES.—Matriculation, \$5; for the year, \$200; for one term alone, \$120; for Graduation, \$30. For Graduates' Course, the fee for one year is \$200. For one term, \$120, and for single courses such fees as are specified in the Catalogue. Payment in advance, or if a bond is filed, at the end of the term.

Students in regular standing in any one department of Harvard University are admitted free to the lectures, recitations and examinations of other departments. For further information or Catalogue, address

DR. H. P. BOWDITCH, Dean,

HARVARD MEDICAL SCHOOL,

BOSTON, MASS.

UNIVERSITY OF THE CITY OF NEW YORK,

MEDICAL DEPARTMENT.

410 East Twenty-Sixth Street, opp. Bellevue Hospital, New York City.

FORTY-EIGHTH SESSION, 1888-89.

FACULTY OF MEDICINE.

- | | |
|--|--|
| REV. JOHN HALL, D.D., LL.D., <i>Chancellor of the University.</i> | CHAS. S. BULL, M.D., <i>Lecturer on Ophthalmology; Surgeon to the New York Ophthalmic and Aural Institute.</i> |
| REV. HENRY M. McCracken, D.D., <i>Vice-Chancellor.</i> | FANEUIL D. WEISSE, M.D., <i>Professor of Practical and Surgical Anatomy; Surgeon to Workhouse Hospital, B. I.</i> |
| CHARLES INSLEE PARDEE, M.D., <i>Dean of the Faculty; Professor of Otology.</i> | HENRY G. PIFFARD, M.D., <i>Clinical Professor of Dermatology; Consulting Surgeon to Charity Hospital.</i> |
| J. W. S. ARNOLD, M.D., <i>Professor Emeritus of Physiology and Histology.</i> | JOSEPH E. WINTERS, M.D., <i>Clinical Professor of Diseases of Children.</i> |
| ALFRED L. LOOMIS, M.D., LL.D., <i>Professor of Pathology and Practice of Medicine; Physician to Bellevue Hospital.</i> | PRINCE A. MORROW, M.D., <i>Clinical Professor of Venereal Diseases; Surgeon to Charity Hospital.</i> |
| WM. H. THOMSON, M.D., LL.D., <i>Professor of Materia Medica and Therapeutics; Diseases of the Nervous System; Physician to Bellevue Hospital.</i> | WILLIAM C. JARVIS, M.D., <i>Clinical Professor of Laryngology.</i> |
| J. WILLISTON WRIGHT, M.D., <i>Professor of Surgery; Surgeon to Bellevue Hospital.</i> | LAURENCE JOHNSON, M.D., <i>Professor of Medical Botany; Visiting Physician to Randall's Island Hospital.</i> |
| WM. MECKLENBURG POLK, M.D., <i>Professor of Obstetrics and Diseases of Women and Children; Physician to Bellevue Hospital, and to Emergency Lying-in Hospital.</i> | A. M. PHELPS, M.D., <i>Clinical Professor of Orthopaedic Surgery.</i> |
| LEWIS A. STIMSON, M.D., <i>Professor of Anatomy; Professor of Clinical Surgery; Surgeon to Bellevue and Presbyterian Hospitals.</i> | HENRY P. LOOMIS, M.D., <i>Adjunct Professor of Pathology, and Director of the Pathological Laboratory.</i> |
| RUDOLPH A. WITTHAUS, M.D., <i>Professor of Chemistry and Physics.</i> | E. D. FISHER, M.D., <i>Adjunct Professor of Medical Jurisprudence and Psychological Medicine.</i> |
| WM. G. THOMPSON, M.D., <i>Professor of Physiology.</i> | MAURICE N. MILLER, M.D., <i>Director of the Histological Laboratory.</i> |
| STEPHEN SMITH, M.D., <i>Professor of Clinical Surgery; Surgeon to Bellevue Hospital.</i> | S. C. BLAISDELL, M.D., T. D. MERRIGAN, M.D., <i>Demonstrators of Anatomy.</i> |
| A. E. MACDONALD, LL.B., M.D., <i>Professor of Medical Jurisprudence and Psychological Medicine; General Superintendent of the New York City Asylums for the Insane.</i> | |

THE PRELIMINARY SESSION will begin on Wednesday, September 19th, 1888, and end October 2d, 1888. It will be conducted on the same plan as the Regular Winter Session.

THE REGULAR WINTER SESSION will begin October 3d, 1888, and end about March, 1889. The plan of instruction consists of Didactic and Clinical Lectures, recitations and laboratory work in all subjects in which it is practicable.

LABORATORIES AND SECTION TEACHING.—The complete remodelling of the College building, and the addition of the new "Loomis Laboratory" adjoining, is completed. They will afford greatly increased laboratory accommodations in the departments of Biology, Pathology, Physiology, Chemistry and Physics. A new amphitheatre and a new lecture room have been provided, as well as adequate facilities for Section teaching, in which the material from the College Dispensary will be utilized.

Two to five Didactic Lectures and two or more Clinical Lectures will be given each day by members of the Faculty. In addition to the ordinary clinics, *special clinical instruction*, WITHOUT ADDITIONAL EXPENSE, will be given to the candidates for graduation during the latter part of the Regular Session. For this purpose the candidates will be divided into sections of twenty-five members each. All who desire to avail themselves of this valuable privilege must give in their names to the Dean during the first week. At these special clinics students will have excellent opportunities to make and watch the effects of treatment. They will be held in the Wards of the Hospitals and at the dispensaries.

Each of the seven Professors of the Regular Session will conduct a recitation on his subject one evening each week. Students are thus enabled to make up for lost lectures and prepare themselves properly for their final examinations without additional expense.

THE SPRING SESSION will begin about the middle of March and end the last week in May. The daily Clinics and Special Practical Courses will be the same as in the Winter Session, and there will be lectures on Special Subjects by Members of the Faculty.

It is supplementary to the Regular Winter Session. Nine Months of continued instruction are thus secured to all students of the University who desire a thorough course.

FEES.

For course of lectures.....	\$140 00
Matriculation.....	5 00
Demonstrator's Fee, including material for dissection	10 00
Final Examination Fee.....	30 00

For further particulars and circulars address the Dean,

PROF. CHAS. INSLEE PARDEE, M.D.,

University Medical College, 410 East Twenty-sixth St., New York City.

NEW YORK

POST-GRADUATE * MEDICAL * SCHOOL
AND HOSPITAL,

226 East Twentieth Street,

NEW YORK CITY.

SUMMER TERM, SEASON OF 1888.

This term begins on June 15th and continues until September 17th. Clinics are held as during the Winter Term, both in the Dispensary and the General Hospitals, to which members of the Faculty may be attached. The instruction is chiefly carried on by the instructors and their assistants. The fee for the entire season is \$75 ; for one month, \$30. Special courses are at half the rates of the Winter Term.

The Hospital of the school is closed during the Summer, but the Dispensary is in full operation. Practitioners who wish to see a large number of cases, when the number of practitioners attending is smaller than in the Winter, will find the advantages of the Summer Term exceedingly good.

For Schedule of Clinics, address

CLARENCE C. RICE, M. D., *Secretary.*

MEDICAL DEPARTMENT

—OF THE—

TULANE UNIVERSITY OF LOUISIANA.

(FORMERLY, 1847-1884, THE UNIVERSITY OF LOUISIANA.)

FACULTY:

SAM'L LOGAN, M.D.,
Emeritus Professor of Anatomy and Clinical Surgery.

T. G. RICHARDSON, M.D.,
Professor of General and Clinical Surgery.

STANFORD E. CHAILLÉ, M.D.,
Professor of Physiology and Pathological Anatomy.

JOSEPH JONES, M.D.,
Professor of Chemistry and Clinical Medicine.

ERNEST S. LEWIS, M.D.,
Professor of Obstetrics and Diseases of Women and Children.

JNO. B. ELLIOTT, M.D.,
Professor of the Theory and Practice of Medicine and Clinical Medicine.

EDMOND SOUCHON, M.D.,
Professor of Anatomy and Clinical Surgery.

A. B. MILES, M.D.,
Professor of Materia Medica, Therapeutics and Hygiene

Lecturer on Diseases of the Eye and Ear, S. D. KENNEDY, M. D.

Lecturer on Dermatology, HY. WM. BLANC, M. D.

Demonstrator of Anatomy, RUDOLPH MATAS, M. D.

Ass't Demonstrator of Anatomy, A. McSHANE, M. D.

Instructor of Practical Pharmacy, A. L. METZ, Ph. G.

THE next Annual Session of this Department, now in the fifty-fifth year of its existence, will begin on Monday, October 22d, 1888, and end on Saturday, March 30th, 1889. The first four weeks of the term will be devoted exclusively to Clinical Medicine, Surgery, Obstetrics and Gynecology in the Wards and Amphitheatre of the Charity Hospital; to practical Chemistry in the Chemical Laboratory; and practical Anatomy in the spacious and well-ventilated Anatomical Rooms of the University.

The means for practical instruction are unsurpassed in the United States, and special attention is called to the superior opportunities presented for

CLINICAL INSTRUCTION.

The Professors of the Medical Department are given, by law, the use of the great Charity Hospital as a school of practical instruction and medical students are admitted without payment of any hospital fees. The Charity Hospital contains seven hundred beds; the number of patients annually admitted varies from six to eight thousand, and the number of visiting patients varies from twelve to fourteen thousand. Its advantages for practical study, and especially of the diseases of the Southwest, are unequalled by any similar institution in this country. The Medical, Surgical and Obstetrical Wards are visited daily by the respective Professors, and all Students are expected to attend and to familiarize themselves, *at the bedside of the patients*, with the diagnosis and treatment of all forms of diseases and injury. Regular lectures are also given daily, from 8.30 to 11 A.M. in the Amphitheatre of the Hospital, either on Clinical Medicine or Clinical Surgery, or Pathological Anatomy, and this thorough course of practical clinical instruction is followed by the usual didactic lectures in the three ample lecture-rooms of the Medical Department.

The Administrators of the Charity Hospital elect annually, by competitive examination in March, fourteen Resident Students, who are given board and lodging free of charge.

TERMS PER ANNUAL SESSION:

	FIRST SESSION.	SECOND SESSION.
Matriculation Ticket (once only, on admission).....	\$ 5.00	\$ ———
General Tickets to the Lectures of all Professors.....	140.00	140.00
Ticket of Demonstrator of Anatomy.....	10.00	10.00
Diploma Fee (once only, when graduated).....	—	30.00
Total.....	\$155.00	\$180.00

After the total fees (for two full courses) of \$305, as above, have been paid, no fees (except the \$30 Diploma Fee) are required for subsequent courses, however numerous. The payment of the total \$335 may be distributed over a three years' course, as follows, viz.: \$115 the first year, \$110 the second year, and \$110 the third year. Students and graduates can select such partial courses as each may desire. All fees are payable in advance.

Students who have attended and paid for two full courses of lectures, the last of which was in this institution, are entitled to attend thereafter without charge.

Candidates for graduation are required to be twenty-one years of age; to have studied three years; to have attended two full courses of lectures, and to pass a satisfactory examination.

Graduates of other respectable schools are admitted upon payment of the Matriculation and half Lecture Fees. They cannot, however, obtain the Diploma of the University without passing the regular examination and paying the regular Graduation Fee.

As the practical advantages here offered for a thorough acquaintance with all the branches of medicine and surgery are unsurpassed by those possessed by the best schools of New York and Philadelphia, the same fees are charged.

The fees for the Course in Pharmacy are \$60 per session.

For further information and circular, address

PROF. S. E. CHAILLÉ, M.D., Dean,

P.O. DRAWER, 261.

NEW ORLEANS, LA.

The Jefferson Medical College

—OF—

Philadelphia.

PROFESSORS.

J. M. DaCOSTA, M. D., LL. D., Practice of Medicine.
ROBERTS BARTHOLOW, M. D., LL. D., Mat. Medica, &c.
HENRY C. CHAPMAN, M. D., Institutes of Medicine, &c.
SAMUEL W. GROSS, M. D., LL. D., Princ. of Surgery
and Clinical Surgery.
JOHN H. BRINTON, M. D., Pract. of Surgery and Clin-
ical Surgery.
THEOPHILUS PARVIN, M. D., LL. D., Obstetrics and
Diseases of Women, &c.
J. W. HOLLAND, M. D., Med. Chem. and Toxicology.
W. S. FORBES, M. D., Gen'l Descrip. and Surg. Anat.
WM. THOMSON, M. D., Hon. Prof. Ophthalmology.

LECTURERS.

MORRIS LONGSTRETH, M. D., Pathological Anatomy.
JAMES C. WILSON, M. D., Renal Diseases Clinic.
O. H. ALLIS, M. D., Orthopædic Clinic.
O. P. REX, M. D., Children's Clinic.
CHAS. E. SAJOUS, M. D., Laryngological Clinic.
ARTHUR E. VAN HARLINGEN, M. D., Dermatological
Clinic.

DEMONSTRATORS.

A Corps of eleven Demonstrators and their Assistants.

The Sixty-fourth Annual Winter Session will begin October 1st, 1888, and will continue until April 1st, 1889. Preliminary lectures will be held from September 17th. Two courses of lectures are necessary for a degree. A three years' graded course is also provided. Practical Laboratory instruction is given in all departments without extra charge. General and Special Clinics are given daily at the College Hospital. *With the winter Session of 1890 a three years' obligatory curriculum will begin.* For further particulars, send for the Annual Announcement, to

J. W. HOLLAND, M. D., Dean.

UNIVERSITY OF MICHIGAN.

DEPARTMENT OF MEDICINE AND SURGERY.

THIRTY-NINTH YEAR. COMMENCES OCTOBER 1, 1888.

The course of instruction now comprises THREE collegiate years of NINE MONTHS each. Attendance compulsory. Examination for admission required. Women admitted.

FEES.—For the first year, residents of Michigan, \$35; non-residents, \$60. For each subsequent year, residents of Michigan, \$25; non-residents, \$35. Graduation fee, for all alike, \$10.

Circular and Catalogue, with full details, sent on application.

A. B. PALMER, M.D., Dean,
Ann Arbor, Michigan.

BELLEVUE HOSPITAL MEDICAL COLLEGE,

CITY OF NEW YORK.

SESSIONS OF 1888-'89.

The REGULAR SESSION begins on Wednesday, September 26, 1888, and ends about the middle of March 1889. During this Session, in addition to the regular didactic lectures, two or three hours are daily allotted to clinical instruction. Attendance upon at least two regular courses of lectures is required for graduation.

The SPRING SESSION consists of recitations, clinical lectures and exercises, and didactic lectures on special subjects. This Session begins about the middle of March and continues until the middle of June. During this Session, daily recitations in all the departments are held by a corps of Examiners appointed by the Faculty.

The CARNEGIE LABORATORY is open during the collegiate year, for instruction in microscopical examinations of urine, practical demonstrations in medical and surgical pathology, and lessons in normal histology and pathology, including bacteriology.

For the annual Circular and Catalogue, giving requirements for graduation and other information, address Prof. AUSTIN FLINT, Secretary, Bellevue Hospital Medical College, foot of East Twenty-sixth Street, New York City.

CARNRICK'S SOLUBLE FOOD

IS UNLIKE ANY OTHER INFANTS' FOOD THAT
HAS EVER BEEN PRODUCED.



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<i>Partially Predigested Milk Solids,</i>	-	-	45	parts.
<i>Wheat, with the Starch converted into</i>				
<i>Dextrin,</i>	-	-	45	"
<i>Milk Sugar,</i>	-	-	10	"

We do not claim this food to be "a perfect substitute for human milk." But we do claim that **Carnrick's Food** approaches nearer to human milk in constituents and digestibility than any other food that has ever been produced, and that it is the only infants' food that will, without the addition of cows' milk, thoroughly nourish a child from its birth.

We believe that **Carnrick's Food** solves the problem of a reliable substitute for human milk. The Casein of cows' milk, by partial predigestion with freshly made Pancreatine, is rendered as easily digestible by the infant as human milk.

We have never published an analysis of **Carnrick's Food** "prepared with milk," for, unlike all other foods, it is prepared by the addition of water only, and we base our claims upon the intrinsic value of the food as compared with an equal amount of the solid constituents of human milk. All other analyses or comparisons are misleading. We challenge similar comparisons with any other food and confidently believe, that if **Carnrick's Food** is depended upon for the nutrition of infants, the great mortality among children will be reduced.

Full information regarding the process of manufacture will be cheerfully furnished and samples sent free to those who wish to test **Carnrick's Food**.

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NEW YORK.

BUFFALO LITHIA WATER.

IN THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM.

HUNTER MCGUIRE, M. D., LL. D., late Professor of Surgery, Medical College of Virginia:

"Buffalo Lithia Water has never failed me as a *Powerful Nervous Tonic* when I have prescribed it as such. I sometimes think it must contain, *Hypophosphites of Lime and Soda*. It acts as that compound docs—as a *Tonic and Alterative*."

DR. WM. A. HAMMOND, of New York, Surgeon-General U.S. Army (Retired), Professor of Diseases of the Mind and Nervous System in the University of New York, &c.:

"I have for some time made use of the Buffalo Lithia Water in cases of affections of the NERVOUS SYSTEM, complicated with BRIGHT'S DISEASE OF THE KIDNEYS, or with a GOUTY DIATHESIS. The results have been eminently satisfactory. Lithia has for many years been a favorite remedy with me in like cases, but the Buffalo Water certainly acts better than any extemporaneous solution of the Lithia Salts, and is, moreover, better borne by the stomach. I also often prescribe it in those cases of Cerebral Hyperæmia, resulting from over-mental work—in which the condition called *Nervous Dyspepsia* exists—and generally with marked benefit."

G. HALSTED BOYLAND, M. D., A. M., late Surgeon French Army (Decorated), late Professor of Surgery, Baltimore Medical College, and formerly Resident Physician at the Springs, in the *New York Medical Journal*, April 20th, 1887:

"Dr. Hunter McGuire was the first to direct attention to the reconstituent powers of the Buffalo Lithia Waters. In speaking of Spring No. 2, used in cases of NERVOUS DYSPEPSIA caused by mental over-work, and to quote from his article on the subject: 'It has never failed me as a powerful *Nervous Tonic* when I have prescribed it as such. I sometimes think it must contain *Hypophosphites of Lime and Soda*.'"

"The writer, who has had a large experience in the treatment of diseases of the *Nervous System* by these Waters, extending over a period of four seasons as Resident Physician at the Buffalo Lithia Springs, is decidedly of opinion that their chemico-physiological action is analogous to that of the hypophosphite compound, as mentioned by Dr. McGuire. In confirmation of this, Dr. William A. Hammond writes that he has for some time made use of them in cases of affections of the *Nervous System*, stating that his results have been eminently satisfactory, and that he often prescribes Buffalo Lithia Water 'in those cases of *Cerebral Hyperæmia*, resulting from mental over-work—in which the condition called *Nervous Dyspepsia* exists—and generally with marked benefit.'"

DR. M. H. HOUSTON, Physician to Randolph Macon College, Ashland, Va., Member Medical Society of Virginia:

[Extract from a communication in the *Virginia Medical Monthly* of February, 1878, on the "Medicinal Properties and Uses of the Buffalo Lithia Water."]

"Having had an opportunity of watching very closely the action of the Lithia Water in numerous cases which have fallen under my observation, I am prepared to impute to it one quality at least to which, it strikes me, sufficient attention has not been heretofore directed. I allude especially to its power as a gentle excitant of the *Nervous System*, and as a powerful and permanent NERVE TONIC. To this particular property I am disposed to attribute much of its efficacy in the relief of many chronic diseases. Other mineral waters, with exhilarating properties, are sparkling in their appearance, and their exciting qualities are due to the gases which are disengaged, and which are, consequently, evanescent in effect. The Buffalo Lithia Water is without such impregnation of gases, and its effects are much more permanent."

DR. HARVEY L. BYRD, of Baltimore, President and Professor of Obstetrics and Diseases of Women and Children in the Baltimore Medical College, formerly Professor of Practical Medicine, &c.:

"Buffalo Lithia Water is an admirable general *Tonic and Restorative*, increasing the *Appetite*, promoting *Digestion* and invigorating the general health. It is powerfully *Antacid*, and especially efficacious in what is commonly known as *Acid Dyspepsia*. It is strongly commended to a very large class of sufferers by a peculiar power as a *Nervous Tonic* and *Exhilarant*, which makes it exceedingly valuable, where there is nothing to contra-indicate its use, in all cases where *Nervous Depression* is a symptom."

Water in Cases of One Dozen Half-Gallon Bottles, \$5 Per Case at the Springs.

THOMAS F. GOODE, Proprietor,

BUFFALO LITHIA SPRINGS, VIRGINIA.

1888

THE MONTHLY PUBLICATION OF

The American Journal of the Medical Sciences.

Subscription Rate Reduced to \$4.00 per Annum.

WITH the present year THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES entered upon the cultivation of the larger field of usefulness which awaited its change from a Quarterly to a Monthly. For sixty-seven years it has grown by assisting in the development of American Medicine, until to-day both are honored wherever medical science is cultivated. Its present arrangement, the result of careful consideration, shows that the most advantageous form of a Monthly has been reached through a proper modification of the former Quarterly. More space has been devoted to Original Articles, which are shorter and therefore more numerous than heretofore, so that every reader may find in each issue something new of direct interest to himself. The Classified Summary of Progress, in charge of specialists, has likewise been enlarged. To accommodate these changes the size of THE JOURNAL has been increased, and at the same time the Reviews have been somewhat condensed, yet without sacrifice of their characteristic pithiness and candor. In accordance with the reduction in price of THE JOURNAL to \$4.00, the Commutation Rate with THE MEDICAL NEWS has been placed at \$7.50 per annum.

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Necessarily different in their spheres, THE JOURNAL and THE MEDICAL NEWS are mutually supplementary, and every reader of both periodicals may feel assured that nothing in the life of the great medical world will escape his attention. In order to lead each subscriber to prove this fact for himself, the Commutation Rate for THE JOURNAL and THE NEWS has been placed at the exceedingly low figure of \$7.50 per annum, in advance.

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VOL. XCVI., No. 2.

AUGUST, 1888.

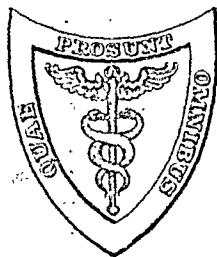
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THE
AMERICAN JOURNAL
OF THE
MEDICAL SCIENCES.

Published Monthly.

EDITED BY

I. MINIS HAYS, A.M., M.D.



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AUGUST, 1888.

CONTRIBUTION TO THE DIAGNOSIS AND SURGICAL TREATMENT OF TUMORS OF THE CEREBRUM.

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II.

REMARKS UPON THE DIAGNOSIS WHICH SHOULD BE PRELIMINARY TO THE SURGICAL TREATMENT OF CEREBRAL TUMORS. [By DR. SEGUIN.]

The surgeon's attempt to remove a cerebral tumor, and thereby prolong, or even in some cases save life, must necessarily be based upon an accurate diagnosis of the lesion. The modes of examination and methods of reasoning necessary to attain such a diagnosis being so unlike the methods of diagnosis employed by surgeons, and requiring so much special experience in neurology, the services of both a physician and a surgeon are required. The medical examination is the necessary preliminary to an operation, and a neurologist can hardly possess the surgical skill and experience which are required, not simply to remove the tumor, but to insure a reasonably certain aseptic condition of the wound and render the operation of trephining in itself not specially dangerous.

The medical diagnosis of a case of supposed tumor of the brain should, before an operation is attempted, be carefully worked out in not less than five lines of inquiry, or secondary diagnoses. 1. The diagnosis of tumor within the skull, and more especially in or upon the cerebral

hemispheres. 2. The diagnosis of the exact location of the tumor. 3. The diagnosis of the depth of the tumor; whether it be cortical or sub-cortical. 4. The diagnosis of the solitude or multiplicity of the tumor. 5. The diagnosis of its nature.

First. THE DIAGNOSIS OF TUMOR OF THE CEREBRUM.

As a rule, this is accurately made by the experienced physician. The gradual development of symptoms, such as headache, convulsions local or general, paresis, and paralysis, co-extension of these symptoms, moderate anæsthesia, choked disk, hemianopsia, stupor, coma, slow pulse, leave hardly any room for doubt. The grouping of symptoms is most various, and largely depends upon the location of the growth, upon its size, and upon personal tendencies of the patient. Anæsthesia is rarely great, headache may be entirely absent, and, in my experience at least, choked disk is not the rule in strictly cerebral tumors. We must, of course, make allowance for exceptional cases, such as those which present only choked disk and an occasional general convulsion, those in which an apoplectic attack is the first symptom that seriously attracts attention, etc. I think that I shall not overstate the case in saying that while the most experienced and careful observer may find at an autopsy a tumor which had caused no symptoms, yet when the symptoms of tumor *are* present, almost every practitioner should be able to make the diagnosis.

Second. THE DIAGNOSIS OF THE TOPOGRAPHICAL LOCATION OF THE TUMOR.

This diagnosis is arrived at by an application of our empirically acquired knowledge due to the clinical and post-mortem studies of Broca, Hughlings Jackson, Charcot, Wernicke, Nothnagel, Exner, Luciani, and many other observers (several of them our own countrymen), and of physiological laws of cerebral action, as elucidated by the researches of Hitzig, Ferrier, Munk, Putnam, Franck, Horsley, and others. To discuss the subject thoroughly is impossible in a paper like this, and I must ask to be allowed to state the bases of a solid localization diagnosis in a summary way.

1. There are parts of the cerebrum which are in a certain sense inexcitable, and lesions of which produce no special or localizing symptoms. When tumors are located in these areas of the brain, the patient exhibits only general symptoms of cerebral disease, such as headache, diffused or localized, general convulsions; pressure symptoms, such as reluctant full pulse, perhaps slow pulse, choked disk, blindness, stupor, with or without partial hemiplegia and hemianæsthesia, dysarthria, dysphagia, coma, with hyperpyrexia, and Cheyne-Stokes respiration at the end. The parts of the cerebrum which belong to this category are (*a*) the fronta

lobes strictly speaking, except the caudal extremities of its external gyri, more especially the second and third; (*b*) the apex and base of the temporal lobes on both sides, and the whole of the lobe on the right side; (*c*) the external and basal aspect of the occipital lobes; (*d*) parts of the parietal lobes; and (*e*) the central ganglia. The fasciculi of medullary substance connecting those parts with the base of the brain, and with other parts of the cerebrum (commissural fibres) are included as inexcitable parts. Progress in pathological and experimental knowledge will, doubtless, reduce these inexcitable areas, but I think that I have stated them as a conservative view of cerebral physiology now dictates.

2. We have left two irregular divisions of the cerebrum, lesions of which give rise to special, definite, localizing symptoms; these are, first, the excitable or motor zone, cortex and attached fasciculi; and second, the known sensory zones, with their fasciculi. The fasciculi from all these zones converge, and are crowded together at the knee and caudal portion of the internal capsule, as it passes ventrad between the basal ganglia, and leaves the cerebrum.

The motor zone comprises in its cortical aspect the following convolutions on both sides of the brain: the caudal extremities of the third, second, perhaps of the first frontal; the pre- and postcentral gyri, and their prolongation within the longitudinal fissure, known as the paracentral lobule. These gyri and portions of gyri are all placed dorsad of the fissure of Sylvius, and are grouped about the fissure of Rolando. That the folds of the insula (island of Reil) have motor properties, is probable. These parts all receive their supply of arterial blood through one channel, viz., the middle cerebral artery; and all of them (with the exception of the insula) can be accurately mapped out on the head by means of one or another of the several methods of cranio-cerebral topography. The subjoined diagrams illustrate the determination of the position of the motor zone by Broca's method.

The motor zone, as its name implies, has motor functions, and has an anatomical and physiological connection with the muscular apparatus of the opposite side of the body, as follows: The base of the third frontal gyrus (left side) with the delicate movement of speech; it also, and the adjacent base of the precentral gyrus with the lingual muscles, the base of the second frontal gyrus at its confluence with the precentral, with the muscles of the face; the middle third of the precentral gyrus with the muscles of the forearm and hand; the upper third of the pre- and postcentral gyri with the muscles of the arm and shoulder; the ends of the pre- and postcentral gyri (paracentral lobule) with the muscles of the foot, leg, and thigh. Probably the muscles of the hip and abdomen are innervated from the bend of the above-named gyri as they dip down into the longitudinal fissure. Those portions of the motor

zone, whose limits are probably not definite, are designated as "motor centres." Thus we have, from below upward, the centres for speech, for lingual, manual, brachial, scapular, abdominal, femoral, crural and

FIG. 6.

Bregma.

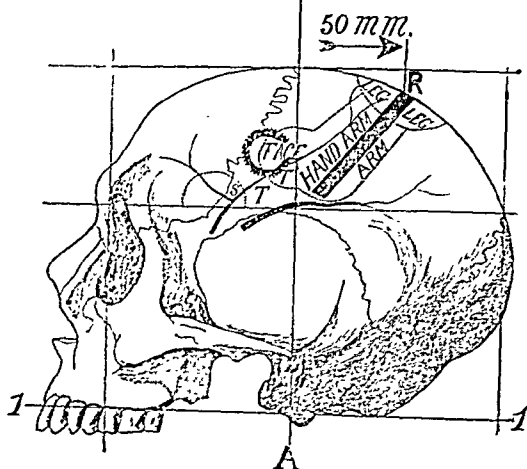
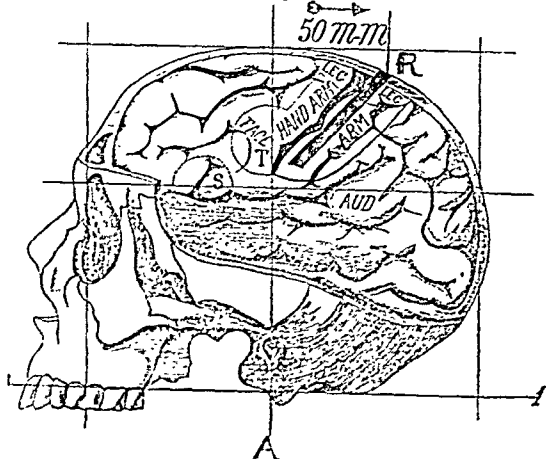


FIG. 7.

Bregma.



Figs. 6 and 7.—Simplified cranial and cerebral diagrams, with Broca's lines. For detailed explanation of these diagrams see *Pepper's System of Medicine*, vol. v. pp. 94-96, and *Gross's Surgery*, vol. ii. p. 42. In Fig. 6 the pre-centric mark indicates Dr. Weir's first trephine opening.

pedal movements. A centre for ocular movements doubtless exists, but it has not yet been determined; it is quite certainly not in the second frontal gyrus, as claimed by Ferrier and Horsley. Another question-

able motor centre is that for laryngeal movements, which is being sought for in the caudal extremity of the right third frontal (homologous with the speech centre on the left side, in right-handed persons). The entire motor zone is easily reached by trephining, the only obstacles in the way being the middle meningeal artery, and, in operations near the vertex, the superior longitudinal sinus.

Of the sensory zone we have as yet positive knowledge of only two of its centres or areas, a probable knowledge of a third, and a suspicion of a fourth. On the left side of the cerebrum the first or dorsal temporal gyrus appears to be the organ for vocal or linguistic audition (A U D on Fig. 7). Upon the inner, mesial aspect of each occipital lobe is a triangular gyrus which has a wonderful function; each cuneus receiving impressions, probably through direct fibres, from the homologous half of each retina on the same side of the median line. Perhaps the first occipital gyrus should be added to this zone for half-vision. That the external aspect of the occipital lobes has some relation to vision is probable, but not yet fully demonstrated in man. The third division or area of which we have knowledge, a preliminary knowledge only, is an uncertain portion of the parietal lobe, probably the inferior parietal lobule, on both sides. This area, we have some reason to believe, receives and registers impressions of muscular sense, or motor residua. The first and third of these areas of the sensory zone are fed, like the motor zone, by branches of the middle cerebral artery, while the second (cuneus and adjacent occipital gyri) is supplied by the occipital artery, a branch of the posterior cerebral. Thus, in the sensory zone, we have a centre for vision, a centre for the audition of language, and a centre for muscular sense. The cortical connections of the fibres and fasciculi for common sensibility, for taste, for smell, and for simple sound-hearing are as yet unknown: perhaps the mesial extremity of the temporal lobes is the centre for smell. The surgeon can readily expose and treat the three known centres enumerated above.

Effects or symptoms of tumors in the motor or excitable zone of the cerebrum. Following the all-important distinction advanced by Brown-Séquard nearly thirty years ago, and which has been a guide-star to successful diagnosticians, we are to distinguish symptoms due to irritation or excitation of a part from those due to its destruction; in other words, there are irritative symptoms and destructive symptoms when a lesion exists and develops in the motor and sensory areas of the cerebrum.

In obedience to the laws of physiological or functional localization, to the pathological law of Brown-Séquard, and as we now know from empirically acquired post-mortem evidence, tumors of the motor zone of the brain are characterized by a somewhat specific symptom-grouping, according to the primary location of the growth. Later the symptom-

group becomes enlarged and obscured by extension of the tumor, its action upon more than one motor centre, and by more or less direct effect upon adjacent parts.

I. *Tumors of the motor zone.*

(a) Tumors of the caudal extremities of the third frontal gyrus (on the left side in dextrous persons) produce at first slowness of speech and paroxysmal motor aphasia. Their extension toward the rest of the motor zone causes paresis and convulsive movements of the tongue, face, and upper extremity on the opposite side. Later still these symptoms, motor aphasia, spasmodic movements, and paralysis of the tongue, face, and upper extremity become more frequent, and, finally, permanent; with occasional spasms.

(b) Tumors of the basal ends of the pre- and post-central gyri cause at first convulsive movements, or paresis, or both, of the opposite half of the tongue; later, paroxysmal motor aphasia, spasm, and paresis of the face and upper extremity; last, complete paralysis of one-half of the tongue, of the face, and upper extremity, and permanent aphasia, with occasional convulsions ("Jacksonian" movements).

(c) Tumors of the caudal extremity of the second frontal gyrus, where it becomes confluent with the lower third of the pre-central gyrus, produce at first paresis with convulsive movements (or *vice versa*) of the facial muscles of the opposite side; later, the same symptoms, with the addition of more or less motor aphasia, paresis of one-half of the tongue, paresis and spasm of the upper limb (more especially the fingers); lastly, permanent paralysis of the face, half of the tongue, and hand, permanent aphasia, and occasional spasms (*vide* the case reported).

(d) A tumor starting in the lower middle third of the pre-central gyrus first reveals itself by spasm and paresis of the opposite thumb and finger (and whole hand and forearm occasionally). After further growth the irritative and destructive symptoms appear in the face and tongue, and more or less marked aphasia occurs; the paresis of the hand and forearm becoming complete paralysis. A peculiarity of lesion of this centre, not as yet proven to exist in lesion of the other centres of the motor zone, is a pronounced subjective numbness and slight though usually demonstrable tactile anaesthesia. This fact, which in its restriction to effects of lesions of the centre for the hand, has been overlooked or indefinitely treated by authors, is perhaps explicable by that other fact that the motor education of the hand and forearm is more largely acquired through conscious sensory impressions. The motor functions of the tongue, face, and leg, are more automatic in their genesis; or, in other words, are performed with much less consciousness of motor effort. To put it in another way, the delicate movements of the fingers and hand are much more sensori-motor, and consciously motor than are the

movements of other muscular groups; those of the facial muscles coming next.

(e) Tumors of the upper middle third of the pre-central gyrus (and perhaps of the post-central also) early cause symptoms in the muscular apparatus of the upper arm and shoulder. Later the spasm and paresis extend to other parts, according as the growth extends ventrad or dorsad. In the former case the forearm and hand, the face, half of the tongue, show symptoms, and, lastly, aphasia may occur, though rarely complete. If the tumor grow dorsad, toward the longitudinal fissure, spasm and paresis, later paralysis, show themselves successively in the thigh, leg, and foot.

(f) Tumors of the upper third, or top of the pre- and post-central gyri, and of the paracentral lobule at first cause symptoms, convulsive and paretic, in the thigh, leg, or foot. There is every reason to believe that in man the special subcentre for the hip and thigh is the cortex of the central gyri where they bend over to form the paracentral lobule, while the lobule itself innervates the leg and toes. Later, by extension of the morbid growth, there are symptoms in the arm and hand, rarely in the face, probably never aphasia (except in the rare cases where a peculiar vitality of the patient permits of the growth of a colossal tumor). Or, there may be (though I do not know of any tumor case on record, yet, at least, one traumatic case exists¹) invasion of the crural centre of the opposite hemisphere, producing paralysis, with spasm or without spasm, of both legs (pseudo-paraplegia).

These propositions, which are based on the completed study of many cases of cerebral tumor, have served and will, I think, continue to serve as safe guides to the diagnosis of the location of a tumor in the motor zone.

One word as to the local and general spasms which are produced by lesions thus placed. Usually the first spasm (clonic or tonic) is limited to a small region, face, hand, arm, shoulder, toe, or leg. The patient is perfectly conscious and watches the "Jacksonian" spasm with curiosity or amusement. Subsequently the spasm shows a marked tendency to extension, in the following serial order: If beginning in the facial muscles, it extends to the hand, to the arm, and, lastly, to the leg of the same side. If starting in the fingers, it next affects the face and upper arm, lastly the leg. When the lesion is on the left side temporary aphasia is primary, or is superadded according to the exact seat of the tumor. If the convulsive movements are first shown in the foot, they extend to the leg and thigh, to the hand and arm, lastly to the face. In all these mono- or hemi-spasms the movements are irregularly clonic and tonic, and consciousness is preserved, even when aphasia occurs. If the

¹ Macleod: Notes on the Surgery of the War in the Crimea, 1885, pp. 212-16.

peculiar irritating action continue longer, convulsions appear on the same side as the tumor and consciousness is lost, showing that the irritation affects both hemispheres. The fully developed generalized spasms with loss of consciousness exactly resemble the seizures of so-called idiopathic epilepsy; so that the natural history of cerebral tumors shows us insensible transition-forms between the smallest localized convulsions and typical "epileptic" ones. It is most interesting to note that the results of physiological experiments upon the motor zones of animals are practically identical. The serial extension of spasm produced by prolonged electrical excitation of one motor centre has been determined by Albertoni, Luciani and Tamburini, Bubnoff and Heidenhain, Franck and Pitres, Unverricht, and Rosenbach, from 1876 to 1883. These results have been confirmed by many subsequent observers, and more especially elaborated by Franck in his latest work (1887).

It will be noticed that in pathological cases and in experiments the symptoms, which are due to a small lesion or to a very limited electrical irritation of a motor centre, are at first restricted to the small muscular group which this centre controls. This early limited spasm or paresis, I have long looked upon (even before the physiological demonstration) as the key to a correct localization diagnosis. It is indispensable to sift the patient's account of his first symptoms, and obtain the corroboration of an eye-witness when practicable, in order accurately and positively to determine the location, nature, and extent of the first symptom, which in many cases is rapidly overlaid and obscured by others. I propose to call this the *signal-symptom* of cerebral tumor. Since the time of Hughlings Jackson's first clinical observation to the present time, very numerous instances of a clearly marked signal-symptom (paresis or spasm) have been recorded, with the post-mortem proof of its dependence upon a localized lesion in one of the cortical motor centres or associated fasciculi. Thus, we have all seen cases of cerebral tumor in which the first localizing symptom was a spasm or paresis of one side of the face, one hand, or one leg, and also motor aphasia. I hope soon to present a detailed study of the signal-symptom of cerebral tumors, its genesis, and extreme importance for diagnosis.

II. *Tumors of the sensory zone.*

Lesions of those areas of the sensory zone whose functions are best known to us, viz., the centres for half-vision and for audited speech, manifest their presence almost exclusively by the so-called destruction symptoms. Irritation symptoms probably occur, but we have little knowledge of them. This subject might tempt one into a lengthy discussion, but, on account of want of space, I must limit myself to a bare statement of the main facts.

(a) A patient presenting, besides the general symptoms of an intracranial growth, such a specific symptom as verbal deafness, without

marked hemiplegia, hemispasm, or hemianæsthesia, probably has a tumor involving the left superior or dorsal temporal gyrus, or its subjacent white fasciculus. The symptoms produced by extension of this growth would be mostly sensory, such as paræsthesiæ, loss of muscular sense, and later anæsthesia of parts on the opposite side of the body.

(b) A patient who has headache, vomiting, choked disk, dulness tending to stupor, increasing hemianæsthesia, with lateral hemianopsia (dark half-fields on same side as anæsthesia), without hemispasm or hemiplegia, quite certainly has a tumor in the white substance of the occipital lobe.

(c) If, with the above-named general symptoms of cerebral tumor, we find lateral hemianopsia almost alone as a localizing symptom—*i. e.*, without hemispasm, hemiplegia, and hemianæsthesia—there is almost certainly a tumor on the inner or mesial aspect of the occipital lobe, opposite to the dark half-fields, compressing and destroying the cuneus. The symptoms to be expected from the extension of such a tumor are: from its growth upward, weakness and even paralysis of the lower extremity of the same side as the dark half-fields; and from its downward growth, symptoms of injury to the cerebellum and lobi optici. That such a diagnostic statement is not fanciful, may be proved by the findings in the first tumor case operated upon by Dr. Weir in the spring of last year.¹ The location of this tumor upon the cuneus, or near it, had been diagnosticated sixteen months before the operation.

Indeed, I am prepared to assert that tumors involving the cuneus, or its subjacent fasciculus, together with other fibres of the caudal division of the internal capsule, are now as easy of correct diagnosis as are tumors of the various motor centres.

Third. THE DIAGNOSIS OF THE DEPTH OF THE TUMOR.

Equally interesting, and important for successful operative interference in cases of cerebral tumor, is the question, whether we are now in a position to tell whether a tumor of the motor zone is cortical or subcortical—the diagnosis of the depth of the tumor. Let us see what observations upon tumor cases teach us in this respect. If such a diagnosis be possible, it will have to be made by a consideration of the following symptoms:

(a) Nature and location of the signal-symptom, presence, and order of appearance of spasm or of paresis; (b) presence or absence of headache; (c) changes in local cranial temperatures. The other symptoms of cerebral tumor are of much more general significance, and cannot, I think, be utilized for this third diagnosis.

(a) The nature and location of the signal-symptom.

In this connection we can invoke the assistance of physiology, and

¹ Medical News, April 16, 1887.

learn whether experiments show any positive differences between irritation and destruction of the cortex, and of subcortical white substance in the motor zone. The credit of first demonstrating that convulsive movements in the opposite limbs may be produced by faradization of the white substance, after excision of a cortical motor zone, belongs to Dr. J. J. Putnam, of Boston.¹ Since, almost all experimenters have agreed that faradization of cortical centres, and their subcortical fasciculi, produces spasm in the parts which the centres innervate; and even low down in the internal capsule (Franck, Beevor, and others) the excitability of isolated fasciculi for the tongue, face, etc., can be demonstrated. We must next ask, Is there any difference in the form or graphic expression of local spasms produced by irritation of a cortical centre, and that produced by irritation of its dependent fasciculus after excision of the cortex? Here we may hope for a scientific guide in making our third diagnosis. The latest authoritative answer to this question is to be found in the remarkable work of F. Franck² on the motor functions of the brain, published last year. This experimenter has determined the following important facts, which have been corroborated by other

FIG. 8.



From Franck, *op. cit.*, p. 101. I. Complete epileptiform spasm produced by electrical irritation of a cortical motor centre. II. Simple tetanic spasm produced by electrical irritation of subjacent white fasciculus. E, E., duration of electrical application. T, tetanic or tonic spasm. Ep, clonic or epileptiform spasm. O, absence of spasm.

observers in certain directions. 1st. There is greater "delay" in the occurrence of muscular contraction after the application of the electric current to the cortex, than there is when it is applied directly to subjacent medullary fasciculi. 2d. Electrical excitations of the medullary fasciculi produce only tetanic contractions, ceasing abruptly, or nearly so, when the excitation stops. When the motor cortex is

¹ Boston Med. and Surg. Journal, July, 1874.

² *Op. cit.*, pp. 99-103.

excited, however, we obtain a tetanic (or tonic) contraction while the current passes, lasting a little while after it ceases, and followed by clonic convulsive movements; in other words, an epileptiform convulsion. Consequently, Franck proposes the following law: "The hemispheric white substance, in the centrum ovale, or in the internal capsule, is devoid of epileptogenous property, whereas the cortex above possesses this property." (This applies, of course, only to the cortex and white substance of the motor zone.)

Does the study of cases of lesions of the human motor cortex and associated fasciculi furnish corresponding data for diagnosis? We must answer, No. The types of spasms observed in cases of cerebral tumor are constantly variable in the same subject. We obtain simple tonic seizures, tonico-clonic and clonic spasms are observed, as well as typical epileptic attacks commencing by tonic spasm of a small part (signal-symptom). Further study of these phenomena may throw more light upon the differential diagnosis between cortical and subcortical tumors; but we must not be too sanguine in this matter, because a source of confusion will always exist in such cases, viz., that in cases of subcortical tumor the cortex governing the affected fasciculus is still present and active, and that the irritation of the tumor may act both centripetally and centrifugally. In the former case the irritation of the tumor would produce "discharges" or spasm dependent upon cortical irritation (true epileptiform attacks), while in the latter case simple tetanic or tonic spasm due to excitation of the medullary substance alone would appear. It is highly probable that in human subjects this twofold excitation takes place, thus explaining the complicated and variable spasmodic movements which are observed. We conclude that at the present time it is impossible to distinguish a cortical from a subcortical tumor by the character of the convulsions observed.

Turning to the purely clinical and empirical aspects of this question, let us see what authorities say. The great majority of recent writers upon nervous diseases do not even attempt the diagnosis of cortical from subcortical lesions. Among these are (in chronological order); Charcot,¹ Pitres,² Wilkes,³ Grasset,⁴ Hammond,⁵ Ross,⁶ Strümpell,⁷ Webber,⁸ Bastian,⁹ Liebermeister,¹⁰ Starr,¹¹ Jastrowitz,¹² Wood,¹³ Seeligmüller,¹⁴

¹ *Leçons sur les Localisations dans les maladies du cerveau.* Paris, 1876.

² *Recherches sur les lésions du centre ovale, etc.* Paris, 1877.

³ *Lectures on Diseases of the Nervous System.* London, 1878.

⁴ *Traité Pratique des maladies du système nerveux.* Paris, 1881.

⁵ *A Treatise on the Diseases of the Nervous System.* Seventh ed. New York, 1881.

⁶ *A Treatise on the Diseases of the Nervous System.* Amer. ed. New York, 1881.

⁷ *Lehrbuch der speciellen Pathologie u. Therapie, Bd. ii.* Leipzig, 1884.

⁸ *A Treatise on Nervous Diseases.* New York, 1885.

⁹ *Paralyses, Cerebral, Bulbar, and Spinal.* Amer. ed. New York, 1886.

¹⁰ *Vorlesungen über specielle Pathologie u. Therapie, Bd. ii.* Leipzig, 1886.

¹¹ *Intra-cerebral Tracts.* New York Medical Record, 1886, i, 174.

¹² *Deutsche med. Zeitung*, 1887, p. 1098.

¹³ *Nervous Diseases.* Philadelphia, 1887.

¹⁴ *Lehrbuch der Krankheiten des Rückenmarks und Gehirns, Abth. ii.* Braunschweig, 1887.

Gowers.¹ Several of these authors, however, give some data bearing on this diagnosis, Gowers stating that lesions of the white substance give rise to local convulsions only when they are situated immediately under the cortex. The following authors discuss the problem more or less: Nothnagel,² Bernhardt,³ Osler,⁴ Mills and Lloyd.⁵ The first author of the second series treating of lesions of the centrum ovale, more especially of clonic spasms produced by them, says: "They are similar in their characteristics to those which are produced by cortical lesions,"⁶ that they may be limited to one member permanently, or may begin in one member and extend to others on the same side of the body without loss of consciousness. If the convulsions pass over to the other side, consciousness is lost and the attack resembles an attack of epilepsy. Yet the author has never seen a case in which a strictly subcortical lesion produced hemispasm, and he considers Pitres' seventeen cases as all open to criticism. He considers it doubtful if a truly subcortical lesion can produce monospasm or hemispasm. His third law relative to lesions of the centrum ovale is substantially as follows: Even if focal symptoms are present, it is impossible to conclude that there is a lesion limited to the white substance, as these symptoms are identical with those produced by lesions of the corpora striata and of the cortex. In other words, the diagnosis of a medullary lesion is at present impossible (1879).⁷

Bernhardt,⁸ speaking of tumors in the white substance of the parietal lobes (including the motor gyri), states that in fifteen out of twenty-nine cases convulsions, local or general, occurred. In the cases of local spasm, paralysis preceded or followed the spasm. The symptoms of this class exactly recall those observed in connection with cortical tumors.

In another place⁹ he repeats that subcortical and cortical tumors of the parietal lobes (which include the central gyri) produce similar motor symptoms, viz., local convulsions preceding or succeeding paralysis. The differential diagnosis is extremely difficult.

Osler¹⁰ reports a case of tumor under the paracentral lobule, which comes nearer to meeting the requirement of a test-case. The growth was found mostly in the white substance; its size was 17 by 15 mm.; it was distant 8 mm. from the left paracentral gray matter, 10 mm. from the top of the brain, and 15 mm. from the central gyri, but the tumor touched the gray matter at several points. The signal-symptom was a spasm, limited to the right extremities, first in the arm, second in the

¹ A Manual of Diseases of the Nervous System, vol. ii. London, 1888.

² *Topische Diagnostik der Gehirnkrankheiten.* Berlin, 1879.

³ *Symptomatologie u. Diagnostik der Hirngeschwülste.* Berlin, 1881.

⁴ *Medical News*, January 19, 1884.

⁵ *Pepper's System of Medicine*, art. Tumors of the Brain, vol. v. Philadelphia, 1886.

⁶ *Op. cit.*, p. 373.

⁷ Nothnagel: *Op. cit.*, p. 377.

⁸ *Op. cit.*, p. 128.

⁹ *Op. cit.*, pp. 131, 132.

¹⁰ *Medical News*, Phila., January 19, 1884.

leg, and last in the face. Paresis followed. In its early period this growth was probably strictly medullary.

Mills and Lloyd¹ express themselves more fully. "As the white matter of the centrum ovale and capsule represents simply tracts connecting cerebral centres with lower levels of the nervous system, with each other, or with the opposite hemisphere, lesions of this portion of the cerebrum will closely resemble those cortical lesions to which the tracts are related. Those (lesions) situated in the white matter in close proximity to the ascending convolutions give symptoms closely resembling those which result from lesions of the adjoining cortical motor centres. In the cases of Osler, Pick, and Seguin, paretic symptoms in the limbs of one side of the body, with or without loss of consciousness, were marked symptoms. In two of these cases some paresis preceded the occurrence of the spasms. They did not, however, fully bear out the idea of Jackson that the hemiparesis or hemiplegia in tumors of the motor tract comes on slowly before the appearance of spasm."

Hughlings Jackson² has placed on record a case which overthrows the dictum that tumors of the cortex invariably produce convulsions first. Case of traumatic external tumor on left side of the head of eighteen years' standing. Six months before observation severe local pain appeared in this region, and there developed a gradually increasing paresis of the right leg, arm, and face (in order); optic neuritis; but *no convulsions*. The autopsy showed an internal tumor pressing upon the motor zone. Jackson adds: "In all cases of very slowly coming on hemiplegia I have seen, the tumor has always been of (in) the motor tract. That disease of the surface—even very limited disease thus placed—will cause hemiplegia, is well known, and is illustrated by several cases of this series; but in all cases seen save this one, the hemiplegia has followed a convulsion." Consequently it appears that Jackson, in 1874, considered it a law that cortical lesions produced convulsions first, paresis second.

In my own records I find the following data in three cases of cortical and one of subcortical tumor. In the subcortical tumor,³ which was just beneath the top of the central convolutions, latero-dorsad of the paracentral lobule, paresis preceded spasm. In the case we present, on the contrary, spasm preceded paresis.⁴ With respect to the three cases of cortical tumor of the motor zone, in one,⁵ local spasm probably preceded paralysis; in the second,⁶ paresis and spasm appeared simul-

¹ Op. cit., p. 1059.

² Medical Times and Gazette, 1874, ii, 152.

³ A Third Contribution to the Study of Location of Cerebral Lesions, Journal of Nervous and Mental Diseases, June, 1887.

⁴ It is doubtful if this tumor was, strictly speaking, subcortical.

⁵ Contribution to the Study of Localized Cerebral Lesions, Seguin's Opera Minora, p. 215, New York, 1884.

⁶ Second Contribution to the Study of Localized Cerebral Lesions. *Idem*, p. 495.

taneously in the left hand; and in the third,¹ monospasm occurred first. These five cases, and other cases by different authors, bear out the preceding statements that, at present, no law of motor symptoms can be formulated for cortical and subcortical tumors.

(b) Can the cortical or subcortical location of a tumor be determined by the presence or absence of localized headache? There has long existed a somewhat well-founded notion that lesions of the brain are more painful in proportion as they are nearer to the dura mater. Yet a study of recorded cases of tumor go to show that such remarkable exceptions occur, that the rule is not one to be depended upon, though it has a certain corroborative, or secondary value. Only a few cases need be cited.

In Osler's² case of subcortical tumor headache is not mentioned, while in the case of Baudot (cited by Pitres³) of a tumor in the middle portion of the centrum ovale, with symptoms of lesion of the motor zone, severe headache was an early symptom. Russell⁴ reports a case of cancerous tumor of the right frontal lobe, involving both white and cortical gray substance, in which "slight headache" occurred, and Hughlings Jackson⁵ publishes a case of tumor compressing the cortex of the motor zone, in which severe local pain (not a common headache) was a marked symptom during the first six months.

Bernhardt⁶ states that headache was positively absent in 2 out of 36 cases of tumor in the white substance of the frontal lobes, and in 3 out of 29 cases of tumor in the parietal lobe. As regards the medullary substance of the occipital lobe, there is no observation in which it is stated that headache was absent, but in 4 out of 15 cases pain is not mentioned among the symptoms. He considers pain as a symptom of no special value for localization; it may even be on the side opposite the tumor.

Perhaps a more certain indication is the presence of tenderness to percussion. A case seen by me last autumn, in consultation with Dr. Obendorfer,⁷ well illustrates the small value to be attached to these two symptoms. A man, æt. fifty-six, had suffered from obscure urinary difficulties, including hæmaturia; a few months before death he developed symptoms of cerebral compression, headache, drowsiness, slow pulse, but no choked disk. For several weeks the head-pain was localized over the right frontal region, in a space about four centimetres (1½ inches) in diameter. This region was also tender when I saw the patient. Surface temperature carefully taken with an Immich metallic thermometer, gave on right frontal bosse 96.5°, on the left 97°. Consequently, the sensory

¹ *Idem*, p. 493.

² *Lésions du centre ovale*, p. 62.

³ *Op. cit.*

⁷ Cited with Dr. Waldein's permission.

² *Medical News*, Philadelphia, January 19, 1884.

⁴ *Med. Times and Gazette*, 1874, 1. p. 530.

⁶ *Op. cit.*

symptoms, together with the absence of hemispasm and hemiplegia, of hemianopsia, were in favor of the existence of a tumor on or in the right frontal lobe; though the absence of increased local temperature argued otherwise. The autopsy made in December, 1887, by Dr. Waldstein showed a large cancerous tumor of the kidney, and two secondary tumors in the brain; one in the right temporal, the other in the right occipital lobe. There was no lesion of any sort in the right frontal region.

In view of the utter conflict between these observations by reliable authors, I think it unnecessary to quote more. The conclusion is evident that pain and tenderness are symptoms of wholly secondary value for localization purposes.

(c) Do variations in the local cranial temperature help us? Here we also obtain a qualified negative answer. The normal average temperature at the various "stations" is widely different, according to first-rate observers (Broca,¹ L. C. Gray,² Maragliano and Seppilli³). Observations of cranial temperature have been recorded in only four cases of cerebral tumor (to my knowledge), besides the case reported, and the results would seem to indicate that there is sometimes a rise of cranial temperature over the site of the tumor. In our own case the results are irregular and inconclusive. It may be objected that better results would be arrived at by using the thermo-electric differential calorimeter of Lombard, but if great variations occur when measurements are made in fifths and tenths of a degree, how much greater would be the irregularity and uncertainty of results measured by one five-hundredth of a degree, one two-hundredth, or even by one-hundredth. The fluctuations and variations would necessarily be enormously increased by using the more sensitive instrument.

A summary of Gray's normal cranial temperatures, and the full data of the temperature in four cases of intracranial tumors, will be found in Pepper's *System of Medicine*, vol. v. pp. 1036-7, together with some bibliographical references.

Writing in 1886,⁴ Dr. M. Allen Starr states his conclusion to be in complete accord with Nothnagel's in 1879, viz., that "there are no diagnostic local symptoms of lesion of the centrum ovale."

Still, as regards the motor zone, in which, as a rule, it is usually possible correctly to localize a tumor, the question is somewhat simplified, and may be stated as a diagnosis of probability, with many chances of error. In favor of a strictly cortical or epicortical lesion are these symptoms, none of them having specific or independent value: Localized clonic spasm, epileptic attacks beginning by local spasm, followed by

¹ *Thermometrie Cérébrale*. *Revue Scientifique*, September, 1877.

² *On Cerebral Thermometry*. *Journal of Nervous and Mental Diseases*, July, 1878.

³ *Rivista Sperimentale di Freniatria*, etc. Anno V. fascic I. and II. [*Alienist and Neurologist*, I. 1880.]

⁴ *Intracerebral Tracts*: *New York Medical Record*, 1886, I. 174.

paralysis; early appearance of local cranial pain and tenderness; increased local cranial temperature. In favor of subcortical location of a tumor: Local or hemiparesis, followed by spasm; predominance of tonic spasm; absence, small degree, or very late appearance of local headache, and of tenderness to percussion; normal cranial temperature.

In the case reported by us this evening, this question was discussed by Dr. Weir and myself. We were not unprepared to find the cortex normal, because the late appearance of headache, the absence of constantly increased temperature over the supposed site of tumor, pointed to a subcortical tumor.

The exact location of the growth in the case reported cannot now, and perhaps never will be accurately stated. My belief is that it was in close relation to the gray matter deep in the sulcus which separates the second and third frontal gyri. But for surgical purposes, it was a subcortical tumor. No sign of it appeared on the surface of the brain, and the depth of the cavity left by its removal was estimated by Dr. Weir at about one and a half inches.

Fourth. THE DIAGNOSIS OF THE SOLITUDE OF THE TUMOR.

The surgeon's decision to operate, and the probabilities of his success, will depend very much upon the presence of but a single tumor in the brain. Can we diagnosticate multiple cerebral tumors? To this question a qualified affirmative may be given.

When the symptoms of cerebral tumor occur in an individual who already bears a tumor or presents signs of tuberculosis, the probabilities that the cerebral secondary deposit is multiple, will be very great, and for this and other considerations an operation will be inadvisable.

When symptoms indicating lesions of different cerebral centres or systems are present, and especially when the symptoms of basal disease are combined with those characteristic of tumor of the motor or sensory zones, the probability of double or multiple lesion will be so great as to amount almost to certainty. For example, should a patient present motor symptoms in one hand and side of face, spasm and paresis, with headache and perhaps choked disk, justifying the diagnosis of tumor in the precentral gyrus; if in such a patient marked anæsthesia, or hemianopsia, or verbal deafness should develop, we would have reasonable ground for suspecting the presence of another tumor (or of several tumors) involving the posterior division of the internal capsule in the occipital lobe, or the left first temporal gyrus. Or, if in a patient with symptoms of tumor in the precentral gyrus, there should supervene marked dysphagia and dysarthria, symptoms of irritation or paralysis of the pneumogastric and spinal accessory nerves, with bilateral paresis of the extremities, the presence of an additional growth in or on the medulla oblongata may be diagnosticated. This was the case of a girl

observed some years ago at my clinic for nervous diseases of the College of Physicians and Surgeons, by Dr. W. R. Birdsall and myself. The main tumor was found at the autopsy to have been correctly localized; but there were several others in the brain, one of them in the very centre of the medulla oblongata, explaining the bulbar symptoms which closed the patient's life.

This problem of recognizing growths which are distant from one another, and which affect different systems of fibres and different ganglia of the encephalic mass, is relatively simple, though, of course, not always resolved during the patient's life.

FIG. 9.

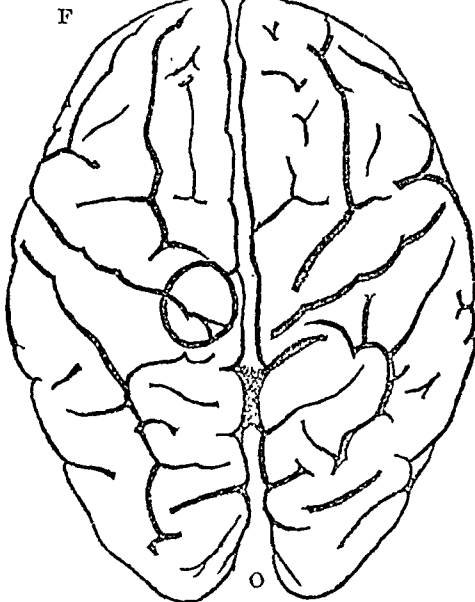


FIG. 10.



Fig. 9.—Diagram of convexity of brain, showing location of the (subcortical) tumor. F. Frontal end of brain; o. occipital end.

Fig. 10.—Diagram of transection of left hemisphere, showing position of tumor, and of two minute secondary growths.

A much more obscure form of multiplicity of cerebral tumors is when more than one growth exists in one system or zones close together. These cannot, I believe, by any possibility be recognized during the patient's life, and may also escape observation at the time of the operation.

This unexpected complication is illustrated by the appended diagrams (Figs. 9 and 10), which represent the location of a sarcomatous tumor of the leg-centre, reported by me last year before the Association of American Physicians, in Washington.¹ This tumor was correctly diagnosed during life, in 1881, before the idea of operating for tumor of the brain had been advanced. The transverse section shows, besides the main

¹ Journal of Nervous and Mental Diseases, June, 1887.

tumor, which could have been removed most easily, two small secondary growths deeper in the white substance, which, had an operation been attempted, would probably have been overlooked.

This difficulty is one which ought not, in my opinion, to weigh much against operating in well-defined cases; it is one of the unavoidable bad chances of the operation.

Fifth. THE DIAGNOSIS OF THE NATURE OF THE TUMOR.

In some cases this is all important, as a negative element, in deciding for or against an operation. For example, in cases of tuberculosis of the lungs or other organs, or of general tuberculosis, if symptoms of brain-tumor present themselves, it is extremely probable that this cerebral growth is a tubercle or that there are several tubercles. It is certainly undesirable to interfere in such a case.

In a second category of cases, coincident with a recognizable cancerous tumor of external parts or of internal organs, symptoms of intracranial tumor appear. Here, again, the probability of multiple cerebral growths and the fact that other organs are affected with an incurable disease should lead to a refusal to operate. In other cases the cerebral symptoms occur after the extirpation of the peripheral tumor, but the contraindication remains quite as strong, because of the probability of multiplicity.

In a third set of cases we have every clinical reason for believing that a gumma or several gummata are in the brain producing the symptoms. Here, again, the objection of probable multiplicity of growths exists, but it is not as imperative as in the two preceding categories.

Hale White,¹ of London, in a recent excellent study of one hundred cases of cerebral tumor with respect to the feasibility of an operation, has expressed the opinion that gummata should not be operated, and Prof. Bergmann, of Berlin,² who has also written upon cerebral surgery last year, criticises Horsley for having operated on such a tumor. We must take exception to both White's and Bergmann's dicta as not based upon a proper consideration of the natural history of gummata. One of the peculiarities of these feebly nourished, degenerative growths is their tendency to persist as inert tumors, yet acting as foreign bodies, after most thorough specific treatment. Of course, a gumma of the brain should not be sought for by surgical methods before every medicinal means has been used. A thorough anti-syphilitic treatment with mercury, and especially with the iodide of potassium administered according to the American method,³ should be carried out for a long time. If, after this had been done for several months, the localized spasms and paresis, and perhaps other symptoms of localizable cerebral lesion exist, an operation

¹ Guy's Hospital Reports, vol. xliii, 1885-6.

² Die chirurgische Behandlung von Hirnkrankheiten. Archiv f. klin. Chirurgie, xxxvi., 1888.

³ The American method of giving potassium iodide in very large doses, etc., Archives of Medicine, New York, October, 1884.

is certainly justifiable. An inert, degenerated gumma in the cortex of the motor zone will, I believe, continue to cause discharging symptoms indefinitely. Against this action further anti-syphilitic treatment is useless, and the continued use of bromides only postpones and reduces the discharges. Besides, if nerve-tissue is compressed by such an inert tumor so as to cause paresis, its recovery is impossible until the pressure is removed by surgical interference. While acknowledging, therefore, that probable multiplicity is an objection to operating for gumma of the brain, I think the operation desirable, in well-selected cases, after a thorough medicinal treatment has been carried out.

The diagnosis of all other forms of intracranial growths is most obscure, and we can only be guided by statistical results as to the absolute and relative frequency of the varieties of tumors, and it should be borne in mind that the deductive application of such data to a case in hand is extremely uncertain—almost mere guesswork.

The statistics which can be best utilized for such a purpose are those of Bernhardt and Hale White, which probably contain few if any duplicated cases. The cases of intracranial tumor which have been published since the date of Bernhardt's monograph (1881) excepting White's cases (1886), would doubtless be considerable, and very instructive, but we have had no time for such a bibliographical labor. Bernhardt and White together tabulate 580 cases, which can be grouped as follows:

	Number.	Per cent
Nature of tumor not stated	133	22.9
Tubercular tumors	137	23
Gliomata	76	13
Sarcomata (including cysto-sarcoma)	75	13
Hydatids, cysticerci, and echinococci	30	5
Cysts	27	4.6
Carcinomata	24	4
Gummata	21	3.6
Glio-sarcomata	14	2.2
Myxomata (including myxo-sarcomata)	12	2
Osteomata	6	1+
Neuromata	4	—1
Psammomata	4	—1
Papillomata	4	—1
Fibromata	3	
Cholesteomata	2	
Lipomata	2	
Erectile or vascular tumors	2	
Dermoid cysts	2	
Enchondromata	1	
Lymphomata	1	
Cases	580	

Few remarks are required as comments upon this statistical statement.

(1) The frequency of cysticerci, echinococci, and hydatids in the continental (German) records (no cases appearing in White's list of 100 cases), must be attributed to dietetic conditions. In this country, such growths are, as in England, almost unknown.

(2) The cerebellum appears most prone to cystic formation, often as a secondary development from a sarcomatous tumor.

(3) The average age at which most sarcomata and gliomata occur is almost the same—between thirty and forty years.

(4) Slow development of symptoms is in favor of sarcoma.

A fair general conclusion to be drawn from the above data is, that the surgeon must be content to have the physician furnish him with a positive diagnosis of intracranial tumor, with a reasonably exact diagnosis of the location of the tumor, and with a probability diagnosis of its solitude. Except in cases of secondary new-formation (in which an operation is almost positively contra-indicated), and in cases of cerebral gummata, the diagnosis of the nature of the tumor, and of its encapsulation or infiltration, should be withheld.

I may be permitted to add a statement of my own estimate of the advisability of operating for the removal of a cerebral tumor. Assuming, with Lucas-Championnière, Weir, and others, that the operation of trephining in itself is now almost without danger, I would still restrict surgical interference to cases which present well-defined indications. This remark is, however, not applicable to certain cases of epilepsy following injury to the cranium, of inveterate fixed cranial pain, etc., where an exact medical diagnosis is not possible, yet in which the surgeon may consider an exploratory trephining desirable—with the explicit understanding as to the purpose of the operation. There appears to prevail a tendency to indiscriminate operations on the brain, which is to be deprecated, because it tends to bring into discredit a therapeutic resource which now offers some little hope of cure in otherwise fatal cases, and which may in the future yield still more satisfactory results.

THE TREATMENT OF BRONCHIAL ASTHMA.

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THE pathology of asthma has been warmly discussed, and various theories have been suggested to explain the phenomena of the nocturnal seizures and their recurrence, but a careful survey of the facts has convinced me of the truth of the nervo-muscular origin as put forth by C. J. B. Williams, Hyde Salter, Biermer, and Thorowgood, as it is the only theory that affords explanation of (1st) the fitfulness of the dyspnoea; (2d) of the ever-changing physical signs, and especially of the rapid appearance and disappearance of sounds within the thorax; and (3d) of the remarkable influence of certain therapeutic agents on the spasmodic attacks.

Having discussed the pathology of asthma elsewhere,¹ I will confine my remarks in this article exclusively to its treatment, introducing only so much of the pathology as is necessary for illustration; and as we have arrived at the conclusion that bronchial asthma is a neurosis chiefly affecting the pulmonary plexus, and spreading through its various connecting branches, and thus implicating the pneumogastric, spinal, and sympathetic nerves, we have to consider the best means of allaying such nerve storms. As in the case of all neuroses, we are met with many difficulties, arising for the most part from individual idiosyncrasies. The medicine which suits one patient does not suit another, and the climate that cures an attack in one, appears to produce it in another, so that many investigators give up the search after a scientific basis for treatment of bronchial asthma in despair.

There are, however, practical rules and indications if we take the trouble to study them, and they appear to be the following:

First. To counteract, if possible, the tendency to asthmatic attacks, which arises generally from some definite lesion the result of a former inflammatory attack.

Second. To allay, and keep allayed, the asthmatic spasm; this is principally done by removal of the patient from the various exciting causes of the attack, but also by reducing the sensibility of the pulmonary plexus of nerves.

Now, in dealing with the first, we must note that, according to Hyde Salter, no less than eighty per cent. of asthma is traceable to bronchial inflammation in childhood, following on whooping-cough, measles, bronchitis, or broncho-pneumonia, and in adults it often follows upon phthisis.

¹ Article "Asthma," Quain's Dictionary of Medicine. "Lectures on Spasmodic Asthma," Lancet, 1873.

The most probable cause of this sequence is that all these diseases give rise to swelling of the bronchial glands, the position and relation of which are too little studied in thoracic pathology. They have been admirably delineated by the late Noel Gueneau de Mussy,¹ and his pupil Barety,² the latter of whom classified them, and demonstrated their exact relation to the pneumogastric nerves, and to the sympathetic ganglia. Careful study of these will show that it is impossible for enlargement of the subtracheal glands to take place to any large extent without causing pressure on the vagi and their branches. It is rare for the pressure to be great enough to give rise to ulceration of the trachea or bronchi, though this occasionally takes place, as was seen in some cases of Percy Kidd,³ but considerable enlargement of the bronchial glands at the root of the lung is by no means infrequent, and may be detected by physical signs, which consist generally of dulness in one or both interscapular or suprascapular regions. The swelling of the large glands of the anterior mediastinum may be detected by the presence of dulness over the first portion of the sternum.

Now, we know that the preparations of iodine are singularly efficacious, both in reducing the frequency of asthmatic fits, and also in causing the absorption of lymphatic glands, if administered in sufficiently full doses, and it is probable that this last-effect is the explanation of the first one.

A medical friend once said to me, "I never give up a case of asthma until I have tried ten grains of iodide of potassium three times a day." It is indeed wonderful how this salt reduces the frequency of the attacks. In some cases it undoubtedly produces iodism, though not immediately, but the evil day may generally be postponed by largely diluting the salt with water. Some patients never derive benefit from it unless they feel the commencement of iodism. A late well-known physician, and a martyr to asthma, told me that he used to take potassium iodide until the metallic taste appeared in his mouth, which he always found was accompanied by secretion from the bronchial tubes, and at once relieved the spasm.

In one severe case, where the large doses were followed in forty-eight hours by an eruption of acne over the face, the patient, a lady, told me that she did not obtain relief until the spots appeared, and she gladly endured them to secure freedom from the asthma.

The iodide of potassium appears to be far more effective in doses of from gr. viij to gr. xv than in the smaller ones of gr. ij to gr. v, and at the same time the larger dose does not appear to increase the risk of

¹ *Gazette des Hôpitaux*, 1867 and 1868.

² *L'Adenopathie Trachéo-bronchique*. See also Quain's Dictionary of Medicine, "Diseases of Bronchial Glands."

³ *Pathological Transactions*, 1825

iodism, provided, always, that plenty of water be taken with it. Patients often take gr. viij to gr. x two or three times a day for months, and one patient of mine persevered for two years, with the only drawback of an occasional rash of urticaria and a metallic taste in his mouth. By this means he was kept entirely free from asthma.

Three of the most obstinate cases of bronchial asthma that I ever came across, in all of whom the attacks were accompanied by lividity, were by this means relieved so far that they could control the seizures sufficiently to attend to their business, and one of the three was completely cured.

The iodide of sodium may be substituted for the iodide of potassium, but the dose is smaller (about five grains), and a combination of the two iodides is often desirable.

Various mineral waters containing iodine in some form exercise a favorable effect on asthma, but are slower in their action. Such are the Woodhall and the Purton, in England, and the waters of Kreuznach, in Germany. Some people, however, are so susceptible to the action of iodine that a few glasses of Woodhall water, which contains one-fourth of a grain of iodide of sodium in a pint, will produce iodism, as I noted in the case of a well-known physician who tried it for asthma.

The inunction of the ointment (unguent. potassii iodidi) or of the liniment (lin. potass. iodidi c. saponi) or the painting of the skin with tincture of iodine has never, in my experience, produced the same therapeutic effect on the asthmatic attacks.

The indications for prescribing iodide of potassium or the above-mentioned waters are (1) the absence of catarrh and bronchitis, (2) the well-marked presence of the neurotic element, and (3) the detection of dulness along the right or left edge of the first portion of the sternum, or in one or both interscapular regions, showing enlargement of the bronchial glands. Another medicine of great use in reducing the predisposition to asthma is arsenic, and it may with advantage be combined with the iodides. This and the mineral waters of La Bourboule and Mont Doré, which contain arsenic, seem to act in some way as a tonic to the respiratory functions and to strengthen the controlling or inhibitory element of the nervous system of the lungs.

Free sponging in a bath with tepid or cold water every morning, to which sea salt may with advantage be added and a careful dietary, which we will discuss presently, may do much to keep off the attacks of asthma.

The treatment of the attack generally resolves itself into the administration of antispasmodics, which may be classified as stimulant and sedative. Brandy and water, whiskey and water—best administered warm, hot strong coffee, spir. ætheris (in drachm doses), and inhalation of nitrite of amyl are examples of this first class, and appear to act by

promoting large bronchial secretion and expectoration, but the nitrite of amyl, which is said to influence the vasomotor system and to relax the arteries, has not been successful in my hands in asthma.

The sedative class of antispasmodics has much greater claims on our notice, as several of them, such as belladonna, stramonium, and henbane, have been indicated for use by the experiments of C. J. B. Williams in 1840, who found that, in animals poisoned by those drugs, the bronchial tubes were dilated, and incapable of being excited by any stimulus, and abundant clinical evidence has proved their efficacy in reducing the asthmatic spasm, but the difficulty lies in applying them at all times to the lungs, and bringing the pulmonary plexus and bronchial muscle fully under their influence.

The popular method of smoking them in cigarettes, or inhaling the smoke of deflagrating powders or pastilles, composed of the dried leaves of *datura tatula*, or *datura stramonium*, or *lobelia*, or *belladonna*, and nitrate or chlorate of potash, is useful up to a certain point, but in my experience the effect is more certain and stronger when the medicinal agent is taken into the stomach, or injected under the skin, and although use may be made of the various fuming powders for temporary relief, reliance should chiefly be placed on medicines containing the antispasmodics; as it would seem probable that the products of combustion of a plant must differ greatly from its natural juices, and sap carefully extracted, as is now done by pharmacy, and consequently exercise a different effect on the system.

The best way is to combine the stramonium, belladonna, or henbane in the form of succus or tincture, with the iodide of potassium, to be taken during the day, and to administer a pill of extract of stramonium (gr. $\frac{1}{2}$), or belladonna (gr. $\frac{1}{2}$), at night during the attack.

A useful form is the following:

Potassii iodidi	.	.	.	.	.	.	3ij to 3iij.
Tinct. stramonii	.	.	.	.	.	.	3ij to 3iij.
Syrupi scillæ	.	.	.	.	.	.	3j.
Extract. glycyrrhizæ	.	.	.	.	.	.	3j.
Aquæ	.	.	.	.	.	.	ad 3viij.

Dose. — A tablespoonful in a wineglass of water, three times a day.

Of the various sedatives to be used during the attack, chloral is one of the safest and best, but a dose of from gr. xx to xxx should be administered at the beginning of the attack, or, if there be premonitory symptoms, before it has actually commenced. A dose at bedtime will often enable an asthmatic to sleep through slight early morning seizures, and this medicine will, if pushed strongly, control the asthma. In one most obstinate case under my care, it was administered in gr. xx doses every four hours for several days, and allayed the severe spasm, but

induced vomiting and an eruption of purpura. Another asthmatic, who can always keep his asthma at bay by hard riding during the hunting season, has taken chloral during the rest of the year in doses of gr. xx to gr. xxx during his frequent attacks, with no harm whatever, for about ten years. My experience with chloral, which I adopted from Professor Biermer's practice, has, on the whole, been highly satisfactory, and I consider it one of the most useful and least harmful of the sedative antispasmodics.

When the paroxysm is very severe, chloroform, or ether, or iodide of ethyl may be inhaled, and Martindale's capsules of chloroform (℥x), and iodide of ethyl (℥iij to ℥v), are specially well adapted to the purpose, as being tolerably safe to entrust to nurses and to patients. Iodide of ethyl can be inhaled up to ℥x, and the inhalations even repeated at the end of two hours without danger, and while it quiets the asthmatic spasm, it also calms the cough which accompanies it. In the height of the paroxysm the patient can neither swallow nor inhale, and it is then that the hypodermatic injection of morphia (gr. $\frac{1}{4}$) or of atropia (gr. $\frac{1}{60}$), or of both combined, does great good, and often cuts short the attack at the very beginning. Another channel for introducing antispasmodics is the rectum, and suppositories of morphia or belladonna have often succeeded in relieving the tightness of the breathing when other measures were impracticable. With regard to the numerous powders, cigarettes, and tablets, if any distinction is to be made, I should certainly single out Himrod's powder (lobelia, stramonium, tea, and nitre), the Green mountain cure (also lobelia, stramonium, tea and nitre, in different proportions to the Himrod), and Senier's powder, Savory & Moore's tablets, and the pulv. stramonii comp. of the Brompton Hospital pharmacopœia,¹ as the most effective. Among the cigarettes, Espic's and Joy's do most good, and all contain large proportions of stramonium and lobelia. Even tobacco-smoking gives relief, and Trousseau was able to control his own slighter attacks completely thereby. The application of stimulating liniments, such as lin. terebinth. aceticum, or lin. ammoniæ, to the wall of the chest, during an attack, often gives great relief to the breathing, and is well worth a prolonged trial.

One old-fashioned but very effective antispasmodic has been omitted, the ethereal tincture of lobelia, and it should certainly be tried, but in full doses, say of a drachm, and repeated every four hours while the spasm lasts. The various bromides, of potassium, ammonium, and sodium, are useful in large doses, but their influence on the pulmonary

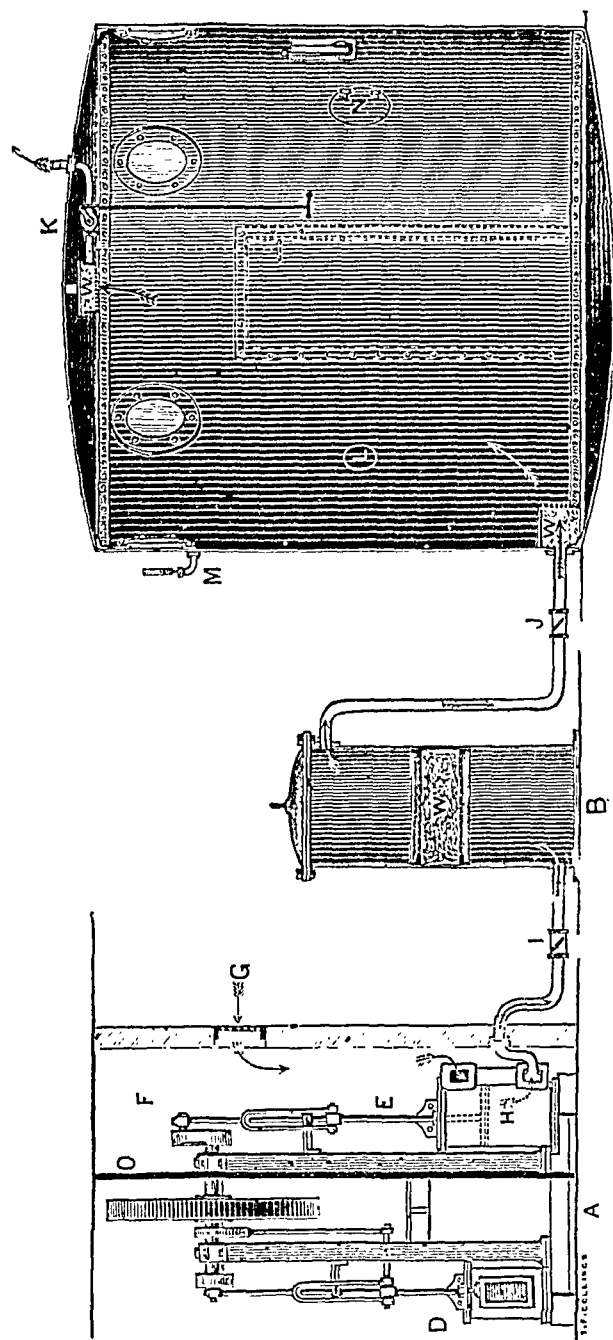
¹ R.—Pulveris stramonii 5iv.
 Pulveris anisi,
 Pulveris potassii nitratis na 5ij.
 Pulveris tabaci gr. v.

plexus is not so satisfactory as that of the iodides, though they may often be combined with these advantageously, and the addition of a drachm of the bromide of potassium to the chloral night-draught generally augments its sedative effect.

ÆRO-THERAPEUTICS.—The application of a rarefied or compressed atmosphere in bronchial asthma has been of late years gaining ground, especially on the Continent, where a number of ingenious apparatus have been contrived for the purpose. In many of these the air is supplied through a mask closely fitting to the nose and mouth, from which a pipe passes into a hollow cylinder containing a certain volume of air. This is plunged into a second or larger cylinder containing water. Condensation of the air is produced by placing weights on the top of the air cylinder, and rarefaction by drawing off water from the larger cylinder. This is the principle of Hauke's, Waldenburg's, Cube's, and Schnitzler's apparatus. Some of these machines have two cylinders, one for rarefying, and another for condensing, which enable the patient to expire into the rarefied air, while inspiring the condensed air.

These apparatus have the advantage of being portable, and in many cases a few lessons will enable patients to make a proper use of them, but they cannot be employed in a severe attack of asthma, where the sufferer is unequal to the exertion they require, or, indeed, to any exertion. On the other hand, to place the asthmatic in a chamber and gradually to condense the atmosphere, as is done in the compressed air bath, is as pleasant as it is advantageous, and entails no exertion of any kind on the patient's part. Establishments for compressed air baths exist largely abroad, at Paris, Berlin, St. Petersburg, Stockholm, Brussels, and in many other cities, and in London we have a very good one at the Brompton Hospital, which is available for private as well as for hospital patients, and I doubt not, when this treatment is better known, it will be more largely used. The Brompton apparatus for the compressed air bath consists of (see illustration): 1, a circular chamber with arched roof constructed of sheet iron three-sixteenths of an inch thick, strengthened by girders and ribs of iron, having a diameter of ten feet, and a height of eight feet, and capable of containing four persons. The chamber is fitted with an inlet pipe for the supply of fresh air, and an outlet pipe for the escape of vitiated air; 2, an eight horse steam engine for compressing the air; 3, and of a central reservoir to receive the air during compression, and to regulate the current, and to act as a filtering apparatus for purifying and even for cooling it before entering the circular chamber. This last is fitted with gauges to record the pressure, with an escape valve, and an air-tight cupboard, to enable foods, medicines, or messages to be passed to the inmates of the bath. Each sitting in a compressed air bath occupies two hours, half an hour being occupied in raising the pressure gradually to nine or ten pounds (about two-thirds

of an atmosphere), which pressure is maintained at the full for an hour, and the last half is taken up in reducing it to the normal pressure. The air rises in temperature during compression, and falls slightly during



Brompton apparatus for compressed air bath.

the reduction of pressure, but the general fault of compressed air baths is that the temperature is usually too high, and in summer this is often a real difficulty, which has to be met by cooling the air with ice before it enters the chamber.

I have submitted a large number of cases of asthma to this treatment, and almost invariably with great benefit. It appears to lessen the severity of the attacks, and to lengthen the intervals between them. The great relief comes from the diminution of the emphysema, as evidenced by (1) the reduction of the chest circumference, (2) by the reappearance of hepatic and cardiac dulness, (3) by greater freedom of respiration. Besides this, cough and spasm subside and there is cessation of the wheezing and sonorous rhonchus within the chest, the breathing is easy, but slow, and the pulse is stronger and tenser than before. It would appear that the compressed air and warmth, for they seem inseparable, exercise a sedative influence on the pulmonary plexus and bronchial muscle, and render them less sensitive to atmospheric and other changes after leaving the bath. Not only do the attacks become less frequent, but the respiratory capacity, as measured by the spirometer, increases, and the general condition is shown by the gain of appetite, color, and weight, to be improved.

A drawback to this treatment is that to insure any good, permanent result, a large number of baths must be taken (twenty-four spread over one or two months is the minimum, and it is often desirable to extend the number to fifty or sixty).

I have seen patients carried for the first few times into the air bath, but soon recovering sufficiently to walk to and from it, and regaining strength enough for considerable exertion. I have frequently had recourse to this mode of treatment when all medical and hygienic methods have failed to reduce the asthmatic spasm, and generally the result has been most favorable. I cannot agree with some authors who hold that this treatment is only useful in asthma combined with catarrh or bronchitis, as I have found it equally advantageous in pure neurotic asthma, where the catarrhal element was not present at all, and which was, in fact, nothing but a pure neurosis.

The cases of asthma in which the compressed air-bath is contraindicated are those in which there is distinct valvular disease of the heart, or extensive cardiac dilatation, but extensive emphysema and bronchitis are not contraindications, as both affections are largely benefited by its use. Again, it should be avoided in all cases where there is evidence of either fatty change in the heart, or atheromatous degeneration of the arteries.¹

DIETARY.—Asthmatics, from necessity, become spare feeders, and are often very thin. In so many cases a heavy meat meal is followed by an attack that a restricted dietary is inevitable. To certain asthmatics certain articles are specially injurious, while to others they are not so.

¹ For further information on this subject, I must refer the reader to my lectures on the Compressed Air-bath and its Uses in the Treatment of Disease (Smith & Elder).

The dietary which suits most asthmatics best is that which limits them to two meat meals, viz., breakfast and lunch or early dinner, and restricts their food for the rest of the day to liquids, with only bread, toast, or biscuits as solids; the great principle being that the asthmatic should retire to bed with gastric digestion quite complete, and thus preclude any pressure upward against the diaphragm from flatulent accumulations in the stomach. Where there is much dyspepsia, and especially where flatulency occurs immediately after meals, it is advisable to omit sugar and starch from the dietary and to avoid potatoes, and in these cases a little alcohol in the form of whiskey, or brandy and water, should be taken with lunch or dinner. Coffee is generally a suitable beverage, and should be taken at least once a day, black, as it distinctly lessens the spasm without rendering the patient sleepless, whereas tea, though it is a product of the same natural order of plants, acts in a different way and often increases the neurosis. Various meat extracts, such as Brand's and Valentine's, and strong beef-tea, especially when taken warm, are excellent, as they are easily assimilated, and enable the patient to get over the asthmatic attack without great prostration.

It need hardly be added that all articles of food which are in themselves more or less indigestible, such as pastry, pickles, uncooked vegetables, salads, garlic, and fruit, except when perfectly ripe, and we may add cheese in its various forms, and richly dressed or highly flavored dishes, are to be strictly avoided.

CLIMATE.—To many asthmatics climate is everything, and the fact of their being surrounded by an atmosphere in which they can breathe freely without fear of spasm means entire abandonment of invalid habits and a return to active life, usefulness, and happiness. But of all the perplexing questions of climate, the fitting one for an asthmatic is the most perplexing, and often involves a series of experiments before success is achieved.

The atmosphere which suits most asthmatics is a dry one, hot or cold, as the case may be, and a locality rather devoid of trees, or at any rate of deciduous woods. Open heathery commons with a light sandy or gravel soil are generally suitable. Fir trees do not seem to affect asthmatics injuriously, and the combination of sand-soil and fir trees, such as prevails at Bournemouth, is usually beneficial. Soil has a great influence, and a dry, permeable soil is better than a damp, impermeable one. As a rule, clay is pernicious; some asthmatics, however, cannot live on either limestone or chalk, though sandstone and granite are rarely complained of.

Though asthmatic people prefer dry air, they by no means crave for pure air and generally thrive better in towns, especially in smoky ones, than in the country. This has been an established fact with most asth-

matics, though from time to time we find exceptions. Still it is so marked a rule, that it not rarely happens that asthmatics repairing from the country to see a London physician, lose their asthma the first night they sleep in London, and finding their enemy gone, return home without seeing the doctor at all, though unfortunately only to find the foe awaiting them in their former haunts.

There are many asthmatics, too, who reside in London, and as long as they do so seldom experience an attack, and are able actually to follow their vocations with comfort to themselves; but when they take a holiday in the country, and especially if they go in for cover shooting in some well-timbered and thicketed district, invariably get an attack of asthma, which makes them hie back to their congenial smoke. I have a patient now of this kind. He is an active London solicitor, and as long as he resides in London, or goes to the seaside, he is free from asthma, but if he accepts an invitation to stay at a friend's house in the Thames valley, or takes an autumn shooting in Surrey or Kent, he invariably has an attack of asthma, which a return to London relieves. Hyde Salter used to maintain that the more smoky and impure the atmosphere of a large town is, the better it is for asthma, and really certain of my cases would appear quite to confirm his conclusion, and the curious feature is that almost all asthmatics appear to benefit by the London atmosphere, quite independently of what locality they come from, mountain or valley or plain, wooded or open, sea or inland. The city generally suits them better than the West End, and the West End better than the suburbs. I will give in outline a very striking case.

A gentleman, aged fifty-five, was sent to me by Mr. Mules, of Idminster, in October, 1873. He had suffered from phthisis, which had been arrested by a sojourn in Madeira in 1855. He had considerable consolidation and fibrosis of the right lung, and he was also liable to attacks of gout. He resided in a damp valley in Somersetshire, and for the last three months had suffered from severe paroxysmal dyspnœa coming on nearly every night, and subsiding by day, accompanied by œdema of the ankles. The urine was scanty, sp: gr. 1034 and contained albumin. There was marked dulness over the lower two-thirds of the right lung with bronchophony. Prolonged expiration and wheezing sounds were heard over the left lung. There was no displacement of the heart; the respiration was slow, with very prolonged expiration.

After being ten days in London, and taking only a little alterative medicine, the dyspnœa disappeared, the œdema subsided, and the albumin vanished from the urine. Finding himself so well, he remained in London during November and December, walking out in the fogs, which happened to be more frequent and dense than usual, without harm or inconvenience. In January, 1874, he tried Dover for a few days, but had to return to London on account of the asthma, and staying here continued well, with the exception of occasional gouty attacks, until March, when he returned to Somersetshire. He was free from asthma until June, and then, with the increase and luxuriance of the vegetation, the

asthma returned, and obliged him again to take refuge in London. During this summer visit he did not at first gain complete freedom from the spasm as he had done in winter, owing perhaps to the air being freer from smoke, and I had recourse to various climatic experiments to assist him. First, I sent him on trips on the river to Gravesend and back, with no advantage. He tried the theatre, and in the hot, stifling, gas-smelling gallery he lost his spasm for the time. I then recommended the Metropolitan Railway, where he breathed freely, and was especially comfortable in the part between Baker Street and King's Cross, which is generally credited with being the most impure and worst ventilated section of the whole line. He travelled up and down the Metropolitan line several times a day for a week, and then was able to return to Somersetshire, but only to get it again soon after, with renewed dyspnoea and with œdema of the legs this time; for Weymouth, where he was no better, and by my advice, as London was inconvenient for him, he tried Bristol, but first stopping in the outskirts of the city, was no better; but when he took up his quarters near Guildhall, in the heart of the smoky city, he soon got relief. However, in spite of all these lessons, he once more returned to his Somersetshire home, where his troubles soon accumulated; the œdema of the legs increased, and ascites appeared with œdema of the abdominal walls. Albumin and casts were abundant in the urine, and it was clear that he was becoming water-logged. In this desperate condition he had himself conveyed to London to be under my care, but though tapping the abdomen, and puncturing the legs, gave temporary relief, he sank, and died exhausted May 25, 1875.

Though this case was primarily one of phthisis and gout, the asthma was the chief and most troublesome feature, and the remarkable influence the London atmosphere exercised over this, even when pulmonary and vascular destruction had given rise to œdema and albuminuria, was a striking instance of the climatic treatment of disease.

The chief points in which the London and other smoky town atmospheres differ from those of the open heath, of the seashore, or of the mountains of Scotland, are, according to the late Dr. Angus Smith, that (1) they are more dry, (2) they contain more carbonic acid (it may be added, free carbon), and (3) they have less oxygen. It is possible, however, that the various emanations from the escape of coal and other gases may add to the sedative effect on the asthmatic spasm.

All cases of bronchial asthma are not so favorably affected by the smoky atmosphere, and some patients require dry, pure air, and often warm air—I know several instances. For some, Bournemouth is very well suited, or, if more warmth be required, one of the warm, dry, non-stimulating climates is desirable, such as Hyères, near Tolon; Cimiez, near Nice; and Teneriffe. The climate of Hyères acts more favorably on asthma than any other I know, and its qualities appear to be due to its great warmth, dryness, and distance from the Mediterranean. I have seen dozens of asthmatics lose their attacks in this fine climate. The Riviera generally is far too stimulating, but I have known asthmatics pass winters on the Nile, breathing the desert air with great benefit.

Lately the high altitudes have been tried for asthma, and cases of pure bronchial asthma, without emphysema, have done exceedingly well at St. Moritz and Davos. One patient of mine went to Colorado and lost his asthma, and also his fortune in mining speculations at the base of Pike's Peak. Here it must be the great dryness and freedom from dense vegetation, and the open-air life, which give immunity from attacks.

MYXÆDEMA.

FOUR CASES, WITH TWO AUTOPSIES.

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WITH A REPORT OF THE MICROSCOPICAL EXAMINATION.

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SECOND PAPER.

THE four cases of myxœdema which have been described at length in the first paper¹ resembled each other very closely. In order to learn in what respects they resemble and in what respects they differ from other cases already published, I have examined the literature of the subject, and, after excluding all cases occurring in idiots, and those due to extirpation of the thyroid gland, and several of doubtful diagnosis, I have tabulated 150 cases of myxœdema which have been more or less completely reported, and propose briefly to compare the four cases which I have reported with these 150 tabulated cases.

Sex. 2 of the 4 cases are males, and 2 females. Of the tabulated cases 32 are males and 113 females, while the sex is not stated in 5. Females then exceed males in the proportion of about $3\frac{1}{2}$ to 1.²

Age. In the two women, the disease commenced at the age of forty-nine years; in one of the men at eighteen, and in the other at thirty-three years. Of the tabulated cases, the age at which the disease commenced is stated in the cases of 76 women, and of 20 men; the earliest age at which the disease commenced was in a child eighteen months old, as the result of an injury to the head and neck; and the latest age was in a woman sixty-seven years old. The disease commenced

¹ See the July number of this Journal.

² In this, as in all subsequent instances, the deductions are drawn from the 150 tabulated cases, combined with the 4 cases which I have reported.

at about the same age in the case of married and of unmarried women. The average age at which the disease commenced in the 76 women was thirty-eight years, and in the 20 men forty-two years. The following table shows the age at which the disease commenced in these 96 cases, arranged in decenniums.

1 to 10 years 1	40 to 50 years 26
10 to 20 " 3	50 to 60 " 17
20 to 30 " 16	60 to 70 " 2
30 to 40 " 31	70 to 80 " 0

In the cases of 30 women and 10 men the date of the commencement of the disease is not given. The following table shows the ages of these 40 cases at the time the observation was made, the oldest case being that of a woman seventy-six years old.

1 to 10 years 0	40 to 50 years 15
10 to 20 " 1	50 to 60 " 10
20 to 30 " 1	60 to 70 " 4
30 to 40 " 8	70 to 80 " 1

This table corresponds very well with the first one when we consider the long duration of a case of myxœdema.

It is evident that the disease may commence at any age from infancy to old age, but most commonly commences between the ages of thirty and forty years (the tabulation shows that it commences with the greatest frequency between the ages of thirty-five and forty years).

Heredity. In the case of the 2 males the disease appeared to be present in a mild form in their brothers or sisters; in Case I. the daughter showed signs of the disease, and in Case II. there is a strong neurotic history in the present generation. In the tabulated cases there are three sisters from one family, two sisters from another family, and another woman had a sister (case not reported) who had the disease; thus six cases or three families had sisters who had the same disease. Another case had both a father and a sister who had it; two other cases had mothers who had the disease, and one case (one of the three sisters mentioned above) had a daughter in whom the disease was apparently commencing. Of the tabulated cases some mention is made of the family history in 53; in 25 the family history is noted as being good; in the family history of 4 there was dropsy; of 2 there was rheumatism; of 4 there was cancer; of 9 there was tuberculosis; of 13 there were nervous diseases, and in these latter families insanity occurred 5 times.

In a few cases (8 per cent.), then, there seems to have been a direct inheritance of the disease, and in about an equal number of cases the disease occurred among brothers and sisters. The number of tuberculous family histories (17 per cent.) is rather excessive, and the number of cases in which there is a neurotic family history (25 per cent.) is

decidedly excessive, and when we consider the numerous symptoms of nervous derangement occurring in myxœdema we are the more inclined to attach significance to a neurotic family history.

Etiology. The two women were both married; each had given birth to five children, and in each the disease commenced at the time of the menopause. In Case III. there is a history of syphilis and of excessive drinking and smoking; while in Case IV. there is nothing which can serve as an etiological factor. In the tabulated cases, 82 of the women were married, and 14 were single, while in 17 there is no mention made of this point. A statement is made in regard to the number of children of 64 of the 82 married women, the results of which are that 4 had no children, 6 had 1 child, 6 had 2 children, and one of these 6 had 1 miscarriage; 3 had several children, 10 had 3, and 1 of these 10 had also 1 miscarriage; 3 had 4, 3 had 5, 6 had 6, and of these 6 1 had had 2, and 1 had had 4 miscarriages; 10 had 6, and 2 of these 10 had also 1 miscarriage each; 7 had 8, and 2 of these 7 had also 2 miscarriages each, and 1 had 5 miscarriages; 2 had 9, and 1 of these 2 had several miscarriages; 2 had 11, 1 had 14 children and 7 miscarriages, and 1 had an excessive number of children. Thus 64 women had more than 300 children and 29 miscarriages. In only 3 of the tabulated cases is it definitely stated that the disease commenced at the menopause, although in a number of other cases it occurred about that time. Of the tabulated cases there is a history of anxiety or mental shock in 27, of menorrhagia or excessive hemorrhage in 13, of severe injury in 8 (5 of these being injuries to the head), of syphilis in 3, of intermittent fever in 4, of tetany or functional spasm in 2; and it is stated that the disease commenced during or immediately after pregnancy in 15 cases, immediately after an excessive hemorrhage in 6 cases, immediately after an injury in 5 cases, and immediately after a mental shock in 10 cases.

Thus the most important etiological factors would seem to be excessive childbearing, excessive hemorrhage (it is evident that these two factors may be related), mental shock and worry, and injuries, especially injuries to the head. It is to be remembered, however, that hemorrhages are a common symptom in myxœdema, and it may be that the hemorrhages mentioned as an etiological factor were an early symptom of the disease itself, and that in a certain number of cases the worry which the patient assigned as an etiological factor may have been due to the mental impairment which often manifests itself later in the course of the disease; for among the cases in which worry is assigned as a possible cause, in only two in the fully developed disease is the intelligence said to be good.

Onset. In the four cases the disease commenced insidiously by a gradual and steadily increasing swelling of the skin; in Case III. alone, the patient first complained of eczema. Of the tabulated cases, 10 commenced with neuralgic pains; 5 with an attack of insanity;

3 with erysipelas; 2 with convulsions; 2 with exophthalmic goitre; 2 with eczema; and 1 each with tetany, dropsy, and gastric fever. Where the disease did not commence insidiously, then, it usually commenced with some disease of the nervous or cutaneous system.

Face. In all the four cases there was a very peculiar and characteristic appearance of the face. The complexion was waxy, with a patch of livid congestion on each cheek, the skin was swollen, the eyelids wrinkled, baggy, and translucent, the lips everted, the nose broadened, and the naso-labial fold accentuated, especially as it runs up on the nose. In all of the tabulated cases, whenever the appearance of the face is described in detail, this same description of it is given; so that this facial appearance is a constant and characteristic feature of the disease.

Mucous membranes. In all the four cases not only was the skin of the face swollen and waxy, but the mucous membrane of the mouth was also swollen and anæmic, and the same condition was found to be present in the larynx in the three cases in which a laryngoscopic examination was made. Either in consequence of this infiltration of the mucous membranes and probably of the muscles also, or in consequence of a paresis of the laryngeal muscles, the vocal cords were not normally approximated in phonation in any of these three cases. Of the tabulated cases, the mucous membrane of the mouth was swollen in 26, swollen and anæmic in 25, normal in 5, the gums hypertrophied and vascular in 3, and in 91 cases the condition was not noted. The condition of the larynx is noted as having been anæmic in 2 cases, doubtfully swollen in 1 case, and normal in 1 case; and in 1 of these cases the vocal cords did not approximate closely in phonation. The mucous membrane of the mouth was then swollen in 95 per cent., and anæmic in 47 per cent. of all the cases in which its condition was noted. The mucous membrane of the larynx was anæmic in 70 per cent., swollen in 56 per cent., and the vocal cords did not approximate closely in 56 per cent. of all the cases in which a laryngoscopic examination was made.

Retina. In connection with the laryngoscopic examination, it may be stated that in each of the four cases an ophthalmoscopic examination was made and that in the two women there was a slight atrophy of the optic nerve, and the retina was hazy as if it were œdematous or infiltrated with some substance, while in the other 2 cases the fundus was normal. Of the tabulated cases, an ophthalmoscopic examination was made in 22. The fundus was found to be normal in 16, there was an increase of fibrous tissue in 2, an atrophy of the nerve in 2, a neuro-retinitis in 1, and a hazy condition of the retina in 1.

The fundus was, then, normal in about 70 per cent. of the observed cases, there was an atrophy of the nerve in 16 per cent., a hazy condition of the retina in 12 per cent., and an inflammatory condition of the nerve and retina in 4 per cent.

Skin. In all the four cases the skin was thickened, dry, rough, and scaly; and in places, especially on the hands, was loose and baggy as if the hands were covered with badly fitting parchment gloves. The thickening of the skin was more marked on the face, hands, and body, than on the legs, and it either did not pit at all or pitted only very slightly upon long-continued and strong pressure. It was of a yellow tinge, and the two women presented patches of chloasma and pigment. Of the tabulated cases the skin is noted as having been thickened or swollen in 26; in addition to its being thickened, it is noted as dry and rough in 54; to all these qualities the term scaly is added in 39; and the skin is called thickened, dry, and wrinkled in 8; in only 1 case is the skin noted as having been moist rather than dry, and in 25 cases the condition of the skin is not noted. In every instance, then, the skin is noted as having been thickened; it is noted as thickened, dry, and rough, or wrinkled in about 50 per cent., and scaly in about 30 per cent. of the cases. It is probable that had the condition been more carefully described, it would have been found dry, rough, and scaly more often than the figures given above indicate, and that the condition of the skin would have been found to be as characteristic of the disease as is the appearance of the face. In 12 cases the existence of moles was noted, in 13 cases the skin had a yellow tinge, and in 5 cases there were patches of chloasma or pigment.

Hair, nails, and teeth. In all the four cases the hair had fallen out more or less completely from all the parts where it normally grows, and in Case I., after it had fallen out, it grew in again. In 3 of the cases the nails were badly formed, and in 2 they were brittle. The teeth were brittle and broke easily in Case I., and they were loose and fell out in Case IV. Of the tabulated cases, the hair is noted as normal in 7, as having fallen out more or less completely in 63, as having fallen out and grown in again in 34, as having shown an increased growth and abnormal appearance in 4, as having been soft in 2, as dull and dry in 8, and the condition of the hair is not noted in 70 cases. The condition of the nails is noted as normal in 3, and as malformed and brittle in 10 cases. The teeth were noted as normal in 4 cases, as having fallen out in 24, as brittle in 4, as loose in 15, as decayed in 13, and their condition was not noted in 92 cases. It may be said, then, that not only were the skin and mucous membranes changed in character but the epithelial appendages were greatly altered, the hair had fallen out in about 86 per cent. of all the cases in which its condition was noted, and was altered in character in other cases. The nails were malformed and brittle in about 75 per cent. of all the cases in which their condition was noted, and the teeth were noted as being loose or having fallen out in about 64 per cent., and as being decayed or brittle in about 28 per cent. of all the cases in which their condition was noted.

Perspiration and other excretions. In all four cases there was either no perspiration at all or it was very slight. The secretion of tears, saliva, and mucus from nose was unaffected in Case III., but in each of the other three cases these secretions were profoundly affected: thus in Case II. they were absent or very scanty till toward the end of life, when there was often a free watery discharge from the nose; in Case I. the nasal discharge was increased; and in Case IV. all these secretions were greatly increased and varied on the two sides of the body; it was only necessary for him to bend his head forward at any time to cause a watery discharge to drop slowly from his nose. In the tabulated cases, perspiration is noted as being absent or greatly diminished in 36, and as being increased in 3, in the other cases it is not noted. In 18 cases there is noted an increased and in 1 a diminished discharge of saliva; in 11 cases an increased discharge from eyes and nose, and in 2 cases polyuria is noted. It seems, therefore, that the perspiration was almost constantly diminished or absent, while the saliva and the discharge from the nose and eyes was almost as constantly increased.

Temperature. Subjectively all the four cases felt chilly, and they all felt worse in cold weather, although in Case IV. the swelling was greatest in hot weather. Case I. complained at times of flushing and burning sensations, and these sensations were very prominent symptoms in the two sisters of Case IV. Objectively, the skin of Cases I. and II. felt cold to the touch, and in Cases II. and IV., with the thermometer, a subnormal temperature was found not only in the axillæ, but also in Case IV. in the mouth and rectum, and the temperature of his left axilla was lower than that of his right. Of the tabulated cases, 45 complained of an almost constant feeling of chilliness, although flushing of face and flashes of heat, especially in the early stages, were prominent symptoms in 4. In 14 cases it is stated that the patient felt worse in cold weather. The temperature was found to be normal in 8, and subnormal in 69 cases. In 9 cases there was a difference between the temperature of the two axillæ, the left being the lower more often than the right. In one case, shortly before death, the temperature fell to 66° F., the pulse being 20 and the respiration 12. The temperature, then, was found to be subnormal in nearly 90 per cent. of the cases in which a thermometer was employed. This subnormal temperature readily explains the chilly sensations of which so many patients complain, and it is possible that the flushings and burning sensations noticed in some cases, especially in the early stages, are due to the fact that the skin cannot get relief through perspiration. In the case of the two sisters of Case IV., who complained especially of flushing and burning sensations, there was little or no perspiration.

Pulse. In 2 of the 4 cases the pulse was below 70, in 1 it was 73, and in the other case the pulse rate was not noted. In 3 of the cases

the sphygmographic pulse curve showed high tension, while in one it showed low tension. Of the tabulated cases the pulse rate was below 70 in 33, and above 70 in 23. In 12 it was small, in 7 weak, in 2 full and strong; in 4 there was diminished tension, and in 2 increased tension. In the majority of cases, then, the pulse was slow and small, or weak.

Respiration. The respiration was not noted in any of the 4 cases. In the tabulated cases the respiration was noted 9 times. In 2 it was said to be interrupted; that is, there was a pause after the inspiration as long as the inspiration itself; in 4 the respirations were 18 per minute, in 1 case 16, and in 3 cases 14 or less.

Cerebral functions. In all 4 cases the memory was poor, and the mental condition dull and confused; in three cases there was insomnia; in one there was well-marked insanity, with hallucinations and delusions, and in two cases vertigo was a prominent symptom. Of the tabulated cases the mental condition was noted in 102. It was noted as normal in 9, as dull or sluggish in 66; failure of memory was noted in 34, insanity or hallucinations in 20, mental enfeeblement in 13, irritability in 9, vivid dreams and nightmares in 5, insomnia in 2, and vertigo was a prominent symptom in 9. The cerebral functions were, then, decidedly affected in most cases. In more than half the cases the mind was dull and sluggish, failure of memory occurred in one-third and insanity in one-fifth of the cases.

Special sensibility. In all four cases vision was more or less impaired, and there was a concentric limitation of the field of vision which was most extreme in Case II., and was slight in Cases I. and IV. The other special senses were normal, although Case I. complained of deafness, but this could not be detected on examination. Of the tabulated cases, the patients stated that their sight was impaired in 24, and normal in 27, and in 2 of the 24 cases a careful testing of the vision showed a decided impairment of vision. The patients stated that their hearing was normal in 25, and impaired in 28 cases. Taste and smell are noted as having been normal in 31, and impaired in 11 cases. Thus, in about half of all the reported cases the hearing and sight were impaired; while the taste and smell were impaired in about one-third of the cases. It is to be remembered, that the statements of the dull and stupid patients suffering from myxœdema are not altogether reliable, and that they state that their sensibility is impaired, when an accurate examination might not always reveal any impairment, as in Case I.; so that these figures are probably too high.

Cutaneous sensibility. In all four cases the cutaneous sensibility was normal. Neuralgic pains were present in the course of the disease in Case II. Of the tabulated cases the cutaneous sensibility was normal in 35, diminished in 21, retarded in 10, there was hyperæsthesia in 4, and

the patients complained of numbness in 14 cases. In addition to the 10 cases in which the disease commenced with neuralgic pains, such pains occurred during the course of the disease in one other case. The impairment of sensibility was probably rated too high, for the same reason as was given concerning the special senses, but a diminution of sensibility was certainly present in a considerable number of cases.

Reflexes. In all four cases the superficial and deep reflexes were normal. Of the tabulated cases the superficial reflexes were normal in 6, diminished in 6, tardy in 2, and absent in 3. The deep reflexes were normal in 14, exaggerated in 2, diminished in 6, tardy in 3, absent in 5; while of 2 other cases the superficial reflexes were exaggerated and the deep reflexes absent in the one, and the deep reflexes were exaggerated and the superficial absent in the other. The reflex actions were abnormal, then, in more than half the cases, being most commonly diminished or absent, often tardy, and rarely exaggerated.

Motility. In all four cases all movements were executed slowly and feebly, the walk was unsteady, and they often fell. Of the tabulated cases, the condition of motility is noted in 147; the movements were slow in 13, weak in 21, slow and weak in 75, in 36 the word awkward is added, and in 19 it is stated that the patient falls, or is greatly afraid of falling. In no case is the motility noted as normal. Therefore the movements were executed slowly or feebly, or both, in all reported cases, and awkwardly in 24 per cent.

Speech. In all four cases the speech was slow and hoarse. Of the tabulated cases the character of the speech is noted in 107, it was normal in 3, slow in 100, hoarse in 41, nasal in 21, monotonous in 17, and thick and indistinct in 20. The speech was, therefore, slow in almost every case reported, was hoarse in over 40 per cent., and was changed in other respects in many other cases.

Electrical excitability of the muscles. In all four cases an electrical examination of the facial muscles with both the faradic and galvanic current, showed no alteration in the quality, but a decided quantitative diminution in the electrical excitability of these muscles. Of the tabulated cases, the electrical excitability was noted in 13, in 4 it was normal, in 3 it is merely stated that the muscles responded to one or both kinds of electricity, in 5 there was only a feeble response to strong currents, and in one case which came on during tetany, as the myxœdema developed the electrical excitability, which had been exaggerated, became diminished and $\text{AnOC} = \text{KaCC}$. It may be fairly doubted whether accurate measurements were made in some of these cases in which an electrical examination was made, but the electrical excitability of the muscles was diminished in at least 60 per cent. of the cases.

Thyroid gland. In none of the four cases could the thyroid gland be felt. It is very doubtful, however, if a normal thyroid gland could be

felt in such fat necks as those of these patients. There was no abnormal mobility nor compressibility of the trachea in the two cases in which this sign was noted. Of the tabulated cases, the condition of the thyroid gland was not noted in 82, it could not be felt in 38, it was diminished in size in 11, it was normal in 14, it was enlarged in 2, in 1 of which there was double exophthalmos, and it had been enlarged, although not to be felt at the time of the examination, in 3. In 2 cases the trachea was more movable and compressible than normal. The thyroid gland appears to have been diminished, then, in 78 per cent. of all cases.

Supraclavicular fat. In all four cases there were prominent masses of fat in the supraclavicular fossæ which atrophied somewhat before death in the two fatal cases. Of the tabulated cases, the existence of this pouch is noted as being present in 24, and as being absent in 3. In the other cases no statement is made regarding it. From which it would appear to have been present in 90 per cent. of all the cases in which its condition was noted.

Thoracic and abdominal viscera. In all four cases a careful thoracic and abdominal examination revealed only healthy conditions, except that in one case there was ascites, and in all cases there was an enlarged pendulous abdomen. Of the tabulated cases, the abdomen is noted as being enlarged or pendulous in 11, in 4 there was ascites, in 17 the heart's action was weak, in 3 there was cardiac hypertrophy, in 4 there was reduplication of the heart sounds, in 10 there was accentuation of the aortic second sound, in 1 there was valvular disease, in 5 there were cardiac murmurs, probably anæmic, and in 4 the arteries were hard and resistant. In 61 cases the abdominal and thoracic viscera were noted as being normal. In a considerable number of cases, then, there was a pendulous abdomen, and in a still larger number of cases the heart presented some abnormality.

Urine. In two of the four cases the urine was free from albumin. In Case I. there was no albumin at first, but subsequently albumin and casts were found in the urine, and albumin, casts, and blood were found in the urine of Case IV. Sugar was not found in any of the cases. Of the tabulated cases, the condition of the urine is noted in 113, in 33 the specific gravity of the urine was 1015 or less, and in 30 above 1015; in 27 the amount of urea excreted was greatly diminished, and in 1 normal; albumin was absent in 91, and present in 21 cases; in 3 of these 21 the albumin did not appear in the urine until late in the course of the disease, and in 5 of these 21 the albumin was not constantly present, but appeared from time to time. Casts were present in the urine in 4 cases, and blood in 1. In 1 case there was sugar in the urine and polyuria during a short period of time. It appears, then, that in the majority of cases the specific gravity of the urine was low, and that

the amount of urea secreted was usually diminished, and that albumin was present in the urine in about 20 per cent. of all cases.

Blood. In all four cases an examination was made of the blood. There was no increase in the number of white corpuscles, and the red corpuscles were of normal appearance, and in slightly diminished number, varying from 3,004,000 to 4,091,000 in the cubic millimetre (normal blood containing from 4 to 5 millions red corpuscles in the cubic millimetre). Of the tabulated cases, the blood was examined in 17. In 7 the blood appeared normal, in 4 there was a deficiency of red corpuscles, in 4 there was an increase in the number of white corpuscles, and in 2 there were both a deficiency of red corpuscles and an increase in the number of white corpuscles. The blood, then, showed a deficiency of red, or an excess of white corpuscles, in about 70 per cent. of all cases.

Hemorrhages. There is no history of hemorrhages in any of the four cases, except in Case IV., who frequently suffered from severe hemorrhage from his nose, gums, and bladder. Of the tabulated cases, the subject of hemorrhage is noted in 42. In 1 of these it is stated that there was no hemorrhage of any kind, in 3 there was amenorrhœa, in 19 there was menorrhagia, in 5 there was an excessive loss of blood during or after labors, in 8 there was very excessive hemorrhage after the extraction of teeth, in 4 the gums bled easily, in 6 the patients said that they bled very easily, and that a slight pin-prick caused either an abundant hemorrhage, or an extensive ecchymosis, in 3 there was bloody urine, in 2 there was frequent and severe epistaxis, in 2 there was hemoptysis; in 1 there was purpura, and in 1 the disease commenced after a great loss of blood during an operation. Hemorrhage, then, occurred in a great variety of ways in about 83 per cent. of all the cases in which the symptoms were noted, and must, therefore, be regarded as a very prominent symptom of myxœdema.

Prognosis and course of the disease. In all four cases the symptoms presented considerable variations during the course of the disease; the swelling of the skin and the other symptoms being much worse at certain times than at others. In all the cases the duration of the disease was measured by years; Case IV. having lasted ten years. Two of the cases died in coma. Case IV. thinks that he is improving, but the improvement, if any, is very slight. Case III. has made decided improvement, especially in strength and mental clearness, but his appearance continues characteristic, and he is far from well. The sister of Case IV. claims to have made a complete recovery, but as she was not seen when the disease was at its height her claim to be considered as a case of myxœdema which has recovered is somewhat doubtful. Of the tabulated cases, only 2 ended in complete recovery, but inasmuch as one of these cases ran its entire course in seven months, and exhibited an unusual degree of paralysis, and the other case is the solitary one in

which the skin was rather moist than dry, and as this case is not described in much detail the diagnosis of these two cases is not entirely above suspicion. In the second of these two cases recovery was attended with profuse perspirations. Certainly, if recovery does take place, such a termination of the disease is extremely rare. Some of the other cases improved somewhat under various forms of treatment, but in no other case did the improvement go on to recovery. The disease usually lasts a number of years, and in a few cases lasted between fifteen and twenty years. The manner of death is noted in 12 of the 150 tabulated cases: 6 died in coma, 4 died of pneumonia or other pulmonary disease, 1 of pericarditis, and 1 of exhaustion.

Treatment. In regard to treatment there is little to be said. Nitro-glycerin seemed to produce a happy effect at first in Case II., especially on the temperature, but it produced no permanent improvement in this or in the other cases; and, indeed, none of the few medicines that were tried produced any decided effect, except that jaborandi produced no diaphoresis in Case IV., but, perhaps in consequence of its failure to produce diaphoresis, caused a very alarming condition of prostration. The sister of Case IV. claims that she recovered completely under the almost daily use of baths and friction. In the tabulated cases the treatment is not dwelt upon at any great length. Strychnia was given with good effect in 3, and without good effect in 3 cases. Tonics were given with benefit in 2, and without benefit in 7 cases. Digitalis and iron apparently caused improvement in 1 case. Electricity produced a good effect in 1, and was without good effect in 1 case. Baths were given with good effect in 1, and were without good effect in 3 cases. Jaborandi apparently did good in 1, but was of no value in 5 cases. Nitro-glycerin seemed to produce an excellent effect in 1, but this case subsequently relapsed and was worse than it had been before, and the same drug was given in 3 other cases without benefit. Arsenic, milk diet, friction and hot-air baths were beneficial in 1 case each, and 3 cases exhibited an improvement which could not be attributed to any special method of treatment.

Pathological anatomy. If we turn from the consideration of the clinical aspects of the disease to that of its pathological anatomy, we have as a basis for such a consideration the post-mortem examination of two of the four cases, and Dr. Prudden's most important and complete reports of the microscopical examination of the organs in these two cases. The most marked lesions found (and they are almost identical in the two cases) were:

1st. A separation of the fibres of the superficial layers of the corium, as if the skin had been infiltrated with some fluid or semi-fluid substance, which, in the first case, certainly, was shown not to have been mucin.

Along with this change in the skin, there was, in the second case, a simple atrophy of the hair follicles.

2d. Almost complete destruction of the thyroid gland, which is shown not only by its small size, but also by an excessive atrophy of the parenchyma and a greatly increased amount of connective tissue. Very remarkable is the new formation of lymphatic tissue in the thyroid.

3d. Arterial lesions. The arteries throughout the body were the seat of obliterating endarteritis, with more or less atheromatous degeneration, and in places the arteries presented amyloid degeneration. Collections of small spheroidal cells were grouped about the smaller blood-vessels in many localities, and hemorrhages and hemorrhagic infarctions bore witness to the arterial degeneration.

4th. Hypertrophy of the left ventricle.

5th. Chronic diffuse neuritis.

6th. Interstitial hepatitis.

7th. Fat is atrophic, and this atrophy is most marked where the fat has a gelatinous appearance, as was the case with the subpericardial fat in Case II.

8th. Fatty degeneration of the suprarenal capsules.

In both cases there was an increase in the subarachnoid fluid, and in one case an effusion into the serous cavities generally. In Case I. there were cerebellar hemorrhages and hemorrhagic infarctions in the mucous membrane of the stomach. In both cases there were pleuritic adhesions. In neither case was anything abnormal found in the sympathetic or cerebro-spinal nervous system.

Of the tabulated cases there is a more or less complete report of an autopsy in 17. In none of these is there any special description of the skin except that cutaneous œdema was noted in 2 and purpura in 2, but in 4 cases of myxœdema portions of the skin were excised during life and examined, with the result that there was a widening of the lymph spaces and crowding apart of the tissues in 3, a thickening of the vessel walls in 2, an increase in fibrous tissue in 1, and in 1 the connective tissue was indistinct and seemed to be made up of gelatinous fibres.

The condition of the thyroid gland was noted in 8 cases. It was atrophied in 6, and was so injured in making the autopsy in 1 that its size could not be determined, in 1 it was the seat of a cancerous growth which had apparently commenced subsequently to the development of the myxœdema, in 1 case there was "cell proliferation," and in 1 case new growth of connective tissue in the thyroid. Dr. Hadden¹ stated, at a meeting of the London Medical Society in 1885, "that he had examined the thyroid gland in six or seven cases of myxœdema. Outside the acini there was a round-celled infiltration which became organized into

¹ *Lancet*, 1885, vol. i. p. 709.

fibrous tissue; the cells of the acini underwent proliferation and became fibrous in structure."

Thickened arteries were noted in 8 cases, and in 1 case it was noted that there was thickening of the adventitia of the arteries and almost complete obliteration of their calibre. Hemorrhage is noted in 2 cases (both cerebral).

Hypertrophy of the left ventricle was noted in 6, dilatation in 1, and the heart was said to be normal in 2 cases.

The condition of the kidney was noted in 14 cases, it exhibited the lesions of chronic diffuse nephritis in 12, it was cystic in 1, the adventitia of the arteries was increased in 1, and the kidney was normal in 2 cases.

The liver was the seat of interstitial hepatitis in 5 cases, and was normal in 2.

The fat of the body was yellow and moist in 2 cases.

The suprarenal capsules were atrophied in 1 case and normal in 1 case.

In 5 cases there were ascites and effusion into the pleural cavity, and in 6 cases effusion into the pericardium. In 2 cases there were general pleuritic and peritoneal adhesions. There was an increase in the subarachnoid fluid in 1 case.

The brain was normal in 2 cases, there was cortical atrophy in 2, and cerebral hemorrhage (mentioned above) in 2. The spinal cord was normal in 1 case, and the anterior horns were degenerated in 1 case. The peripheral nerves were examined in 1 case and found to be normal. The sympathetic ganglia were hypertrophied in 1 case, normal in 1, and in 1 the interstitial tissue was increased in amount without there being any new growth of it.

The pituitary body was normal in 2 cases, and hypertrophied in 1. The mucous membrane of the larynx was swollen in 3 cases. The submaxillary gland was normal in 1 case, and in 1 case the interstitial tissue was increased in amount without there being any new growth of it.

The connective tissue generally throughout the body presented a "sodden" appearance in 1 case, and was swollen and translucent in 2 cases.

The description of most of the autopsies is fragmentary, at least in the form in which I have found them reported, and leaves much to be desired; but as far as they go the results of the autopsies confirm the deductions which have been drawn from Dr. Prudden's report, and, in addition to these, they show that the mucous membrane of the larynx is usually swollen, that the cortex of the brain is sometimes atrophied, and that there is an alteration in the connective tissue throughout the body. The changes in the other organs are found so rarely that they may well be accidental.

Chemical examination. In Case I. the skin was examined for mucin, and no more mucin was found in this skin than was found in an equal quantity of skin of a fairly well-nourished woman, which was taken as a control experiment. Among the tabulated cases, an examination for mucin was made in three cases. In one no excess of mucin was found, in another fifty times as much mucin was found in the skin as was found in an equal quantity of œdematous skin, and in the third case the mucin in the skin was found increased, being 0.08 per cent., although I can find no account of any control experiment having been made.

It appears, then, that the amount of mucin in the skin is not so invariably increased as has been supposed, or as would justify the name myxœdema, and that the peculiar nature of the œdema in these cases does not depend, in many cases at least, upon an infiltration of the skin with mucin. A possible explanation of the fact that in myxœdema the skin, although œdematous, does not pit upon pressure is contained in Dr. Prudden's observations that the separation of the fibres and the dilatation of the lymph spaces in the skin of the two myxœdematous cases which he examined were in those superficial layers of the corium in which the interfibrillary spaces are much smaller, and the interlacements of the fibres much finer than in the deep layers, which seem more frequently to be the seat of ordinary œdema. From these smaller spaces, surrounded by a finer network of interlacing fibres, fluid is neither so easily driven by pressure nor so easily affected by gravity, as it is from large spaces surrounded by a coarse network of fibres. Probably in this difference in the situation of the fluid lies the difference between the swelling of the skin in myxœdema and in ordinary œdema.

From this summary of the symptoms and lesions of myxœdema it appears that the disease manifests itself by very characteristic symptoms, which affect especially the cutaneous, the nervous, and the vascular systems.

Cutaneous system. The skin is swollen without pitting, dry, scaly, and cold, the hair and teeth frequently fall out, the nails become brittle, and perspiration is either greatly diminished or absent. The mucous membranes are also swollen, but their secretion is usually increased.

Nervous system. There is mental sluggishness and impairment, and insanity is frequent; sensibility, both special and general, is impaired in about half the cases; the muscles act feebly and sluggishly in all cases; the reflex actions are frequently diminished; speech is slow, and in more than half the cases hoarse; and numbness and neuralgic pains are frequently present.

Vascular system. In the majority of cases the pulse is slow and small, and the heart presents some abnormality. The blood is often in an anæmic condition, and very frequently there are severe hemorrhages.

The temperature, especially the surface temperature, is subnormal, which may be considered in part a nervous symptom.

The lesions found in the disease are a nearly complete atrophy of the parenchyma of the thyroid gland, with, in my cases at least, a new formation of lymphatic tissue in the gland; a general obliterating endarteritis, with consequent left-sided cardiac hypertrophy; a chronic diffuse nephritis; an interstitial hepatitis; a degeneration of the suprarenal capsules; an atrophy of the fat, and a general œdema or infiltration of the skin and mucous membranes.

If we attempt to explain the symptoms of the disease by its lesions, we must seek this explanation either in the disease of the thyroid gland, in the endarteritis or in the chronic diffuse nephritis; for the other lesions are all frequently found at autopsies without having produced any decided symptoms during life. Certainly the endarteritis and the nephritis could explain many of the symptoms, such as the hypertrophy of the left ventricle, the slow, small pulse, the tendency to hemorrhage, the pallor and coldness of the skin, the effusion into the serous cavities, the œdema and albuminuria when present, many of the nervous symptoms, and the frequency with which life ends in coma or from pneumonia. The other symptoms of myxœdema, however, are not to be explained in this way; and general obliterating endarteritis, together with chronic diffuse nephritis, is often found at autopsies of cases which during life did not at all present the clinical picture of myxœdema. We are, then, forced to seek for an explanation of the symptoms in the disease of the thyroid gland. We know almost nothing about the function of this gland, and are, therefore, entirely unable to predict what effects would result from the cessation of its functional activity; and in solving this question must study, 1st, the results of its destruction by disease; 2d, the results of its removal in man; 3d, the results of its removal in animals.

Results of its atrophy from disease. Cretinism is a condition which so closely resembles myxœdema that the first cases of myxœdema ever published were reported by Sir William Gull under the title "On a Cretinoid State Supervening in Women in Adult Life,"¹ and in sporadic cretinism the thyroid gland is either entirely absent or extremely atrophied or degenerated, as it is in cases of myxœdema. Dr. Ball, in his able article on myxœdema,² points out the above fact, and says, "It is a suggestive fact in this connection that deficiency of the thyroid body, as the result of disease, has never been observed except in connection with cretinism or cretinoid symptoms."

Results of the removal of the thyroid gland in man. In 1883, Prof. Kocher reported eighteen cases of a disease which he called "cachexia

¹ Transactions of the Clinical Society, London, 1874, p. 180.

² New York Medical Record, 1826, ii. p. 29.

strumipriva," but which resembled myxœdema in all respects, and which had apparently resulted from the complete removal of the thyroid gland.¹ Since then many surgeons have given reports as to the effects of extirpation of the thyroid which are somewhat contradictory; but as a result of the discussion we may safely say that in a considerable number of cases complete extirpation of the thyroid, not only in Switzerland but in other parts of the world, has been followed by a condition altogether similar to myxœdema, which is called cachexiastrumipriva. Fuhr² states as a result of his investigations on this subject: "After extirpation of the thyroid two accidents occur: one comes on in women immediately, and is a form of tetany which is much more fatal than ordinary tetany, causing a cramp of the diaphragm; the second comes on months and years after the removal of the gland, and is the condition of cachexiastrumipriva."

Extirpation of thyroid gland in animals. The thyroid gland has been removed by a number of experimenters from animals, especially from monkeys, dogs and cats, and almost all the observers agree that the result of such extirpation is a condition resembling myxœdema. Probably the most noteworthy experiments in this direction are those of Victor Horsley,³ who experimented on monkeys, and who found that a day or two after the operation muscular tremors appeared, which at once disappeared on voluntary effort; these tremors increased in intensity and affected all the muscles of the body; the animal became languid, parietic, and imbecile; then puffiness of the eyelids and swelling of the abdomen followed, with increasing hebetude; the temperature became subnormal; there was intense pallor and oligæmia, and the animal died perfectly comatose usually five or seven weeks after the operation. On studying these symptoms individually closer resemblance to myxœdema was found than is even shown by the summary given above.

As a result, then, either of the destruction of the thyroid gland by disease, or of its removal in man or animals, a condition is produced which very closely resembles myxœdema; and although in the case of extirpation of the thyroid the attempt has been made to explain the resulting symptoms of myxœdema by a cicatricial narrowing of the trachea, or by an injury of the cervical sympathetic, yet neither of these attempts has been in the least successful; and the symptoms of myxœdema in these cases must be regarded as the direct consequence of the loss of functional activity of the thyroid gland, and not to any secondary injuries of the operation. We do not know what the function of the thyroid is, the loss of which causes the symptoms of myxœdema; but the new growth of lymphatic tissue in the thyroid in my two cases tends to

¹ Arch. f. klin. Chir., 1883, vol. 29, p. 254.

² Archiv. f. experimentelle Pathologie u. Pharmacologie, 1886, vol. xxi. p. 387.

³ British Medical Journal, 1885, i. p. 111.

confirm Horsley's statement that there is normally lymphatic tissue in the thyroid gland, and points to a hemapoietic function of the gland. However obscure the function of the thyroid gland may be, there can be little doubt that its lesion is the essential lesion of myxœdema.¹

SOME REMARKS ON THE RADICAL CURE OF HYDROCELE:
WITH NOTES OF TWO CASES OF EXCISION OF THE TUNICA VAGINALIS,
FOLLOWED BY RECURRENCE OF THE HYDROCELE.

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IN the history of hydrocele, there have been, both in ancient and modern times, frequent alternations between what may be called the *closed* and *open* methods of treatment, namely, injections on the one hand, and tents, setons, caustics, incision and excision, on the other.

Many of the ancients, amongst them Celsus, Galen, Ætius and Paulus Ægineta, treated hydrocele of the tunica vaginalis testis by excision. In the eighteenth century Saviard, Garengot and Le Dran amongst the French surgeons, recommended the excision of the greatest part of the vaginal cyst when thick and callous. In England, about the same period, incision and excision were practised by, and advocated in the writings of many surgeons, and particularly by Douglas, Percival Pott and Joseph Bell. Mr. Sharp was the great advocate of incision, but at a later period he considered the cutting away of a portion of the tunica vaginalis advisable. Baker, Robertson and Monro, on the other hand, had used and recommended the caustic.

Mr. John Douglas, writing in 1755, advised the excision of the tunica vaginalis even in recent hydroceles, and thought this practice indispensably necessary in hydrocele of long standing. His manner of operating, which he described in detail, consisted in, first of all, taking away an oval piece of the skin of the scrotum, in length equal to the long axis of the hydrocele, and in width at its widest part equal to the widest part of the tumor. This done, the vaginal sac was opened, the fluid evacuated and the vaginal tissue cut through on each side of the testis and spermatic cord and removed, so that all the sac, excepting what covers the spermatic cord and testicle, was entirely removed. Percival Pott, in a letter to Mr. Douglass, described the method of excision performed by

¹ While correcting the proof of this article I learned that the Myxœdema Committee of the London Clinical Society had published their report, but I was unable to procure a copy of it in time to compare with the summary given above, which is necessarily imperfect, because many of the cases on which it is based are imperfectly reported in the journals in which I found them.

him as follows: "I divide the scrotum (and the sac at the same time) through its whole length, and then directing an assistant to hold the lips of the divided scrotum in a proper manner, I dissect the cyst from it on each side and take away as much of it as I can without injuring the testicle or spermatic cord." He never found it necessary to remove any part of the scrotum as Mr. Douglas used to do; and he adds that he had used the method of excision he described in a great number of cases for seven years, and had never seen any reason to disapprove of, or to alter it. Joseph Bell considered that when thickened and hardened, the tunica vaginalis should undoubtedly be removed, and that great enlargement of the sac rendered excision occasionally desirable. Curling, writing in quite recent times, remarks "in old hydroceles, with a sac greatly thickened, excision of a large portion of the dense tissues is the best remedy. The cure is speedier and more satisfactory than when only incision is performed."

Pott at one time classed together injections with the ligature and the cautery as remedies which, "happily for mankind, were then quite laid aside." He had fully described and usually practised—under certain cautions and restrictions—incision, and in some cases excision of a portion of the tunica vaginalis. During the last twenty years of his life, however, he advocated setons in preference to any other mode of radical cure.

When Sir James Earle wrote, the seton, owing to the influence of Pott, and the caustic, through the advocacy of Mr. Else, were the methods commonly employed in England, but some surgeons had returned to the old practice of incision and excision. The teaching of Sir James Earle led to the very general adoption of injections, especially of iodine, and Mr. Pott, having once more altered his opinion, so far approved of the treatment by injection, that he declared to Sir James Earle not long before his death, his intention of giving it a fair trial.

Up to this period the quantity of fluid injected was considerable, and this it was which led to the disasters of the treatment, namely, to extravasation of the injection by the side of the canula into the cellular tissue, and thus to inflammation, suppuration and sloughing of the scrotum. In 1834 Sir Ranald Martin published his first paper in the *Transactions of the Medical and Physical Society of Calcutta*, and in 1842 (April 30th) appeared his communication to the *Lancet*. These papers led to the general employment of iodine and to the diminution in the amount of fluid injected. With this change in the manner of injection there may be said to have ended the occasional disastrous accidents which formerly occurred.

It may be safely said there is no treatment of hydrocele, however severe, which has not been followed by relapse. In ancient times, Albucasis, speaking of excision, alludes to the possibility of relapses

after it. Pott's experience with excision was, so he tells us, uniformly satisfactory. But Joseph Bell states that he had met with cases of recurrence after incision, owing to want of care in obliterating, by adhesive inflammation, every part of the vaginal sac before allowing the divided edges of the tunica vaginalis to adhere to the testicle; and in speaking of excision of the sac, he says, with a view to preventing relapse, that the dressing and after-treatment must be the same in every respect as in simple incision. Thus, it is possible that he may have known of failures from excision when practised in the incomplete form described by him. I have known of cases of antiseptic incision followed by recurrence, and I have seen excision performed with success after both iodine injection and free incision had failed. I have on several occasions practised excision, by which, of course, is always meant excision of the parietal portion of the tunica vaginalis (and some include also that covering the cord), but not the visceral layer covering the testicle itself. But the only instances in which I have seen recurrence after excision are the two cases herein recorded. Nor am I aware of any published cases of recurrence of the hydrocele after excision of the vaginal tunic of the testis in the manner described by any of the authors who have mentioned it.

The cases I shall relate show that the excision of nearly the whole tunica vaginalis is not a guarantee of success, but that as in the case of abscess, dermoid, sebaceous and other cysts, so in vaginal hydrocele a small corner of the cavity unobliterated, a small portion of the sac left behind, may serve as the nucleus of a new formation.

To be quite certain of a cure, the vaginal cavity must be entirely obliterated either by firm universal adhesion of the two surfaces of the sac, or by the filling up of the sac by granulation tissue. That a mere alteration in the secreting character or capacity of the membrane without the formation of adhesions may lead to a permanent cure there is good reason to believe, from the records of Hutin, Velpeau, Chaumet and Boinet, as well as from cases in the experience of most modern surgeons. But we are quite unable to guarantee a permanent cure in this way, even though years have elapsed without re-accumulation. A case of vaginal hydrocele was tapped by Curling twenty-five years after it had been "cured" by Sir A. Cooper by injection, the hydrocele having returned only during the six months previous to the patient coming under Mr. Curling's notice—*i. e.*, twenty-four and one-half years after the radical treatment.

In the two instances of radical cure which Sir C. Bell examined after the injection treatment there was adhesion; and the medium of adhesion had changed into a perfect cellular tissue. The adhesion, to be certain of cure, must be general, not partial, nor trabecular in character. I have, on some occasions after the injection treatment, seen recurrence of the hydrocele in a loculated or many-chambered manner, owing to

the trabecular form of the adhesions excited by the first injection. In such cases a second or third injection has sufficed to complete the cure by provoking universal adhesion of the two surfaces of the sac.

The following is a good illustration of the condition referred to:

George P., æt. forty-three, was sent to me by Dr. Rutherford, of Paulborough, on October 5, 1874. For three years he had had an increasing vaginal hydrocele of the right side, which, at the time of admission to the hospital, was the size of a cocoanut and translucent. On October 7th, thirty-two ounces of typical hydrocele fluid were withdrawn, and half an ounce of a mixture of equal parts of tr. iodine and water was injected—half of which was withdrawn after a few seconds. On October 17th there was evidently a quantity of fluid re-accumulated, and on tapping between eight and nine ounces of clear yellow fluid were withdrawn. This fluid was not all confined in a single chamber, as shown by its running slowly, and only in response to considerable pressure and kneading of the swelling, and after turning the canula in various directions.

Two drachms of a mixture of three parts of tr. iodine to one of water were injected and left in the sac.

On November 4th, there was no re-secretion of fluid but a good deal of thickening of the tunic, and some enlargement of the body of the testis and epididymis—the whole being together the size of an orange. This gradually diminished.

In August, 1887, nearly thirteen years afterward, Dr. Rutherford, after seeing and questioning the patient, informed me that there has never since been any return of the hydrocele.

It is probable that cases which have taken such a course after injection, as the above, are amongst the most satisfactory and permanent of cures, and that their process of cure is by universal obliteration of the sac by adhesions.

But the occasional failure of the injection treatment—according to some, the failures are as many as twenty per cent. with the iodine method; the general opinion that certain conditions of the sac and testicle are unfit for injection treatment; the influence which the anti-septic treatment of wounds has exercised, and, perhaps, also the success attending the various modern operations for the radical cure of hernia, have induced many surgeons to revert to incision and excision.

From a comparison between the closed and open treatment—*i. e.*, the treatment by injection on the one hand, and incision and excision on the other—there does not seem to be much, if anything, to choose, either as to certainty of result or duration of treatment. Nor does it appear that either the thickness and opacity of the sac, or the simple enlargement, or enlargement with irregularity in shape, of the testicle; or the great size of the tumor, or the encysted nature of the hydrocele, or the previous failure of the iodine treatment is of itself sufficient reason for rejecting the iodine treatment in favor of incision or excision. But, on

the other hand, there seems to be nothing which need deter a surgeon from incising or excising a hydrocele under either of the above conditions, unless it be that a cutting operation is dreaded by the patient or is deemed dangerous to the particular individual.

As the complete obliteration of the cavity of the tunica vaginalis is the only security against a recurrence of the hydrocele; and as this result can be obtained as completely by the adhesion which follows injections as by the granulations which result from incision or excision; and further, as relapses are known to follow incision and excision no matter how thoroughly performed, we cannot yet be said to have discovered a more satisfactory mode of *radical cure* than the injection of small quantities of some irritating fluid, after the manner in vogue since the publication of the papers above referred to by Sir Ranald Martin.

The only cases in which, as it seems to me, it would be better to incise or excise than to inject, are the following:

1. When we are in doubt as to the precise nature or relations of the hydrocele sac—*e. g.*, as to whether the tumor is a congenital hydrocele, or a hydrocele of a hernial sac.

2. In some cases, when hernia, whether reducible or irreducible, complicates a hydrocele.

3. When a foreign body in the tunica vaginalis is the cause of the hydrocele.

4. When we have reason to think that the hydrocele is caused by, or associated with, a diseased condition of the testis, for which castration would be the right treatment.

5. When, as in a case I have recently operated upon, a vaginal hydrocele is associated on the same side with an encysted hydrocele of the cord and a bubonocoele. In this last case excision of both the hydroceles, and the hernial sac, and closure of the pillars of the external abdominal ring were successfully accomplished at the same time.

After either incision or excision, it is advised, in order to obtain complete obliteration of the hydrocele sac, to scrape gently the surface of the remaining membrane, or rub it over with iodine, carbolic acid, chloride of zinc, or some other stimulating fluid, and throughout the healing process to keep the wound well drained or dressed from the bottom, with lint or gauze coated with boracic ointment, or iodoform and vaseline. The advantage of stuffing the wound with lint moistened with oil, or coated with ointment, instead of with dry lint is, that the former can be easily removed at the first and every successive dressing if needful, with little or no pain, and without risk of exciting hemorrhage.

The modern "antiseptic incision" differs from the old method of a long free incision, and subsequent stuffing of the sac. The "antiseptic incision" is practically only the "tent" treatment, employed under

edge below and a funnel-like prolongation above longer than the index-finger. This process when filled with water, which it perfectly retained, looked like the distended thumb-stall of a large glove. The sac was somewhat thickened, but the part corresponding in position with the external abdominal ring was thinner than the rest.

Some inflammatory swelling followed the operation, but the patient made a good recovery, and left the hospital well on May the 11th, four weeks all but a day from the operation.

On November 2, 1886, he returned to the hospital with a swelling on the same side of the scrotum, which had commenced to form in the beginning of October, just six months after the excision of the former hydrocele sac.

On admission the swelling was tense, elastic, translucent, and of a very irregular shape. It was quite hard, gave no impulse on coughing and was situated in the upper part of the scrotum reaching nearly as high as the external abdominal ring, being prevented from hanging down by the tough and contracted scar-tissue in the scrotum.

There was no possibility of doubting that it was a hydrocele of that small remnant of the old sac which had been left at the operation.

On November 3d an incision two inches long through the old scar was made into the sac and two ounces of clear straw-colored fluid of ordinary hydrocele character were drawn off.

The cavity was stuffed with boracic lint and iodoform dressing was applied over the wound. No sutures were used. The lint stuffing was removed on the seventh day and a drainage tube was substituted. A fair quantity of pus was discharged for two or three days after the removal of the lint, but on the twelfth day after the operation it was barely possible to introduce the drainage tube, and on the eighteenth day the patient left the hospital quite well. He has remained well since.

CASE II. *Old double hydrocele. One sac treated by excision; the other by repeated tapplings. Reaccumulation on the side treated by excision.*

Ultimate cure of both hydroceles.—Thomas K., æt. thirty-four, a carpenter, was admitted on April 12, 1887, on account of a large double hydrocele which he had had for five or six years. Just before the appearance of the hydroceles he strained himself, and soon began to suffer pain in his testicles; ever since then there has been a gradual increase in the scrotal swelling. No treatment has ever been employed until his first visit to me, when I drew off twelve ounces of turbid, yellow fluid from the right, and twelve ounces of rather turbid, reddish fluid from the left tunica vaginalis. Before the tapping the scrotum was seen as a very large rigid binoval swelling hanging down in front of his thighs. The division between the two sacs was indicated by a vertical depression in the scrotum. Each portion was hard, tense, and slightly elastic but not fluctuating; neither hydrocele transmitted light or was tender on manipulation.

On puncturing, a great deal of resistance was experienced to the transit of the trocar—due to the thick and almost cartilaginous toughness of the tunica vaginalis. After the fluid was removed each testicle was felt to be much and irregularly enlarged.

Immediately after the tapping each hydrocele began to refill, and he was, therefore, admitted into hospital on April 27th for radical treatment. Owing to the chronicity of the disease, the enlargement of the testes, and the great thickness of the sac, the case was not deemed well

suited for injection of iodine, and excision was consequently determined upon.

On April 30th an incision three inches in length was made over the anterior surface of the right hydrocele down to the tunica vaginalis. The vaginal sac, which was very tough and as thick as an old-fashioned penny-piece, was next opened, and after evacuating its contents, was incised to nearly the same extent as the integuments. The whole of the tunica vaginalis was then excised, except that which covered the testicle and a narrow strip immediately adjacent to the testicle at the lower part of the scrotum.

The testicle was larger than normal, and irregular in shape, but otherwise appeared healthy. The tunica vaginalis, especially that over the testis, was highly injected, and much of its surface was besmeared with a yellowish-white stringy lymph, which here and there disguised the vascularity of the vaginal membrane. After removing these flakes of lymph a strip of boracic lint was lightly introduced into the wound so as to surround the testicle, and cover the remnant of the parietal portion of the tunica vaginalis; a drainage tube was inserted at the upper part of the wound, and sutures were used to bring together the edges of the wound, except where the lint and drainage tube projected. Iodoform was dusted over the surface of the incision, and a packing of boracic charpie and a spica bandage served as dressing.

The strip of lint was removed on the third day; and the sutures on May 7th. Some inflammatory swelling and purulent discharge followed the operation, and the greater part of the wound healed up by granulations. On May 28th, as there was still a daily purulent discharge, due to the bagging of about a drachm and a half or two drachms of pus at the back of the right side of the scrotum, a counter-opening was made; a few days later, a seton, consisting of six carbolized horsehairs, was passed through the original wound and the counter-opening. One hair was removed every other day, and at length the sinus was closed after the withdrawal of the last hair.

Meanwhile a reaccumulation of hydrocele fluid occurred at the lowest part of the scrotum as a secretion from the remnant of the tunica vaginalis which had not been removed. The hydrocele formed quite a well-defined round cyst-like swelling; and on tapping it one ounce of clear pale fluid escaped. By June 10th this new hydrocele sac had refilled, and therefore it was incised and stuffed with boracic lint, and daily restuffed until it was closed up by granulations.

The left hydrocele was tapped on the day of the excision of the right sac (April 30th), when between eight and nine ounces of fluid were withdrawn. It was tapped again on May 16th, when two ounces were taken away, and once subsequently, when about one ounce was removed. After this the sac did not again secrete, and the man was discharged with both hydroceles cured on June 18, 1887.

He has since been seen several times, and is quite well, except that both testicles are still irregular in outline, and somewhat larger than normal.

The length of time between the operation and his discharge from hospital was exactly seven weeks.

REVIEWS.

GOUT IN ITS RELATIONS TO DISEASES OF THE LIVER AND KIDNEYS. By ROBSON ROOSE, M.D., F.R.C.S. Fifth edition. 12mo. pp. 175. London: H. K. Lewis, 1888.

AN ADDRESS ON THE THERAPEUTICS OF THE URIC ACID DIATHESIS (THE TREATMENT OF THE GOUTY CONSTITUTION). By I. BURNEY YEO, M.D., F.R.C.P. 8vo. pp. 17. London: The British Medical Association, 1888.

DR. ROOSE'S excellent little book is well known by its former editions. The medical profession, and many not engaged in the healing art, both in Great Britain and America, are familiar with its practical teachings. Its translations into French and German have been well received on the Continent. Any extended review of it in these columns would, therefore, be out of place, were it not for the general importance of the subject, and the fact that the present edition is not a mere reprint, but contains the results of the author's more extended personal observation, and of his watchful scrutiny of the recent publications in every quarter where gout excites attention. And where, in those climes in which Englishmen and Germans have made their homes, does this protean diathetic malady not excite either the absorbing interest of many of the foremost citizens for the present, or their anxious apprehensions for the future?

The first three chapters—pages 1 to 59—are devoted to general considerations with regard to gout, and to a concise critical review of the theories entertained, both past and present, in regard to its nature.

The views of the author are embodied in the following propositions, which, if not wholly novel, are characterized by a very satisfactory definiteness of statement in regard to a subject too often vaguely and indefinitely set forth:

1. Uric acid, in the form of sodium urate, is the *materies morbi* of gout.

2. The deposits of sodium urate in the joints is the cause of the gouty inflammation.

3. This substance is produced in excess, as a result of the imperfect transformation of albuminous substances.

4. This imperfect transformation is, for the most part, due to functional disorder of the liver, or to excessive supply of nutritive materials, or, as often happens, to a combination of these causes.

5. So long as the excess of uric acid is eliminated by the kidneys, decided attacks of gout may be absent; but the symptoms described as pertaining to the uric acid diathesis are liable to be present.

6. The kidneys are apt to become *secondarily* affected, owing to the

irritation set up by the excess of uric acid and other products of defective metamorphosis and by deposits of urates. Primary disorder of the kidney is not a necessary factor in the production of gout.

7. In the majority of cases of chronic gout increased formation of uric acid is associated with defective elimination by the kidneys.

8. The symptoms of nervous disorder in gout are due to the action of the *materia peccans* in the nerve centres.

Chapter IV., upon the causes of gout, is rather suggestive than exhaustive. The author is disposed to assign a comparatively low position to heredity as a predisposing influence. The vagaries of hereditary gout are briefly pointed out and explained, and the influence of personal habits in fanning the smouldering tendencies into activity are emphasized. With regard to geographical distribution, gout is said to be more common in England and in the southern provinces of Italy. The part played by sex, age, climate and season secures due attention, but to dietary excesses, especially excesses in albuminous food, must be assigned the principal etiological rôle.

"There can be no doubt that errors in diet are the most potent cause, both of functional derangement of the liver and also of gout, and that when, as too often happens, deficient exercise is superadded, the development of the gouty diathesis is, in many cases, only a question of time."

The author holds that the popular view in regard to the use of sugar as increasing gouty tendencies is correct, not that it promotes the formation of uric acid, but that, like starch, being readily oxidized, it stands in the way of the normal disintegration of the albuminoid constituents of the body.

The use of alcohol in the form of spirits is not regarded by the author as a cause of gout, except as it unfavorably affects the liver and kidneys and thus interferes with elimination. The light, well-fermented wines he also regards as not liable to produce gout, but thinks that the full-bodied wines, containing much unfermented matter, are potent for evil. Much importance is justly ascribed to the evil effects of malt liquors.

Chapter V. treats of the irregular manifestations of gout, and especially of the visceral and cutaneous affections to which gouty persons are prone.

In Chapter VI. the hepatic and renal disorders connected with gout receive the attention due them. The author discusses the relation of the various forms of albuminuria to gout with thoroughness. He regards the renal disorder as secondary to the lithæmia, and the gouty kidney as probably a result of the irritation due to the excretion of imperfectly metamorphosed substances. Even the occurrence of albuminuria in young subjects with a gouty family history is looked upon as "more than a mere coincidence."

Dr. Roose supports the view, too little regarded by life insurance examiners, that "the gouty constitution undoubtedly tends to shorten life, mainly by causing serious lesions of the heart and kidneys."

The concluding chapter, VII., is devoted to the discussion of the treatment of the gouty diathesis, of the attack of articular gout, and, finally, of the more important of these disorders, which are the direct results of the gouty dyscrasia.

This part of the work is eminently satisfactory. It is applied medi-

cine—the art of healing. The directions are clear, the reason for them obvious, their application practicable. The author insists upon the “absolute necessity” of making a special study of each patient.

Meats are to be given, but in such amounts only as are required to meet the wants of the system. Farinaceous food, such as bread, rice and potatoes, should be used very sparingly; pastry is, of course, forbidden. A little fruit may be used. Alcohol is not permitted, save in cases where it is necessary to digestion. Old whiskey or brandy well diluted, or *sound* claret or hock, are best suited for gouty subjects. Effervescing wines and malt liquors are strictly interdicted. Milk should be used sparingly. The quantity of food taken is, in every case, to be strictly regulated. General hygiene, bathing, exercise, the use of mineral waters and the various spas of England and the Continent are carefully reviewed. The remarks upon the medicinal treatment of the gouty diathesis are chiefly directed to the regulation of the functions of the liver, bowels and kidneys.

The attack of articular gout is treated by purgation by calomel or a saline or both, followed by colchicum and alkalies. The limb is treated by vapor baths and rolled in wool. The local use of belladonna is advantageous. The diet is of the strictest. The treatment of the local disorders of the gouty is briefly but practically laid down.

Dr. Yeo's address, which was delivered at the opening of a discussion of the subject in the Section of Pharmacology and Therapeutics at the Annual Meeting of the British Medical Association, held in Dublin, August, 1887, is, of necessity, less formal and more concise. It is not, however, less definite and emphatic. It also is eminently practical in character. The author claims, as a good working definition of gout, that which he has elsewhere given, namely, “gout is a disturbed retrograde metamorphosis.” The schematic arrangement of the “principal morbid conditions dependent on, or associated with the uric acid diathesis” which follows, is at least as discouraging as instructive; nor can we find much comfort in the list of the “principal proposed remedies for affections connected with the uric acid diathesis,” a list beginning with hot and cold water, and ending with mineral waters and baths, but including between these mild extremes several very active drugs, mostly poisonous, and all nauseous.

Dr. Yeo also insists upon the special study of each case, especially with regard to digestive peculiarities. Our object is to construct, in accordance with, and in subordination to, certain generally admitted truths, a diet which shall be readily digested, and which does not tend to excite acidity and undue fermentation in the alimentary tract; and that diet will differ with different persons. The author recognizes the neurotic factor in gout, and lays stress upon the fact that, at the present day, the nervous manifestations of gout are not seldom encountered in persons who are delicate, with small appetites, and who consume a minimum rather than a maximum amount of food.

As regards alcohol, the malt liquors are most prejudicial; low grade wines next in order. For the rest, the peculiarities of each patient must be regarded. We believe that, in regard to the use of alcohol in the gouty diathesis, the author errs on the side of liberality. The importance of water as a beverage, especially of hot water, is insisted upon.

The first place among medicines in the treatment of both the uric acid diathesis and its various morbid manifestations is given to colchicum, which is evidently regaining its old favor, not as the result of new knowledge, but because experience has given us nothing better. Yeo maintains that, so far from being a dangerous vascular depressant, colchicum, in moderate doses, is capable of restoring regularity and strength to the irregular and feeble pulse of chronic gout, with subacute exacerbations. He adds :

"I trust that the absurd prejudice against this most valuable remedy which has been excited in the mind of the public, will be removed, for I find many gouty persons who, much to their disadvantage, positively refuse to take colchicum, because they have been told that it is 'such a dangerous drug.'"

It is to this popular prejudice against colchicum that must be ascribed the extraordinary statement of Ebstein, that it is preferable to relieve the pain of the gouty paroxysm by hypodermatic injections of morphine, which, he says, act "quicker, more easily and with less danger." In this matter, Yeo, and we are in full accord with him, joins issue with Ebstein utterly. The internal use of opiates in gout, save under exceptional circumstances, is indefensible. Gout is a disease of defective elimination; opium and its derivatives depress in a remarkable manner all the excretory functions except that of the skin; a small dose of morphine will often, in the gouty subject, produce clay-colored stools.

The salicylates, the benzoates, guaiacum, the iodide of potassium and the alkalies receive, in turn, brief but practical consideration. The author holds that physicians are, at the present time, disposed to exaggerate the value of the lithia compounds as compared with those of potash and soda.

Yeo's views upon the subject of mineral waters are entitled to especial consideration; and the indications which he gives for the employment of the waters of the various springs, albeit all too brief, constitute, perhaps, the most valuable portion of the address. The explanation of the fact that all kinds of mineral waters have been recommended in the treatment of the gouty constitution, and the further fact that springs of the most varied composition have been used with success, he finds in the following conditions, which are common to them all :

"1. There is the quantity of water, more or less pure, taken into the body under regulated conditions daily. I have already attempted to estimate the value of this remedy.

"2. There are, in many of these spas, the altered mode of life; the regular exercise in the open air, the modified diet, the early hours, the absence of business cares.

"3. In many foreign spas there is the drier and hotter Continental climate; and

"4. The stimulating effect to excretion and 'tissue change' which the baths, douches, frictions and manipulations applied, at most of them, induce."

Any direct medicinal effect exerted by particular waters is, over and above these attributes, common alike to the "indifferent thermal" springs, and to all the others.

J. C. W. .

ABDOMINAL SURGERY. By J. GREIG SMITH, M.A., F.R.S.E., Surgeon to Bristol Royal Infirmary, etc. Second edition. 8vo. pp. 776. Philadelphia: P. Blakiston, Son & Co., 1888.

THIS work has been increased in size by the addition of 170 pages, and this has been done through elaboration of the subjects treated in the first edition, and by the addition of two new sections, the first on suprapubic cystotomy, of fifty pages; and the second, on operations for abdominal injuries and inflammations, of seventy pages. The latter treats of gunshot-wounds, stab-wounds, ruptures of the intestines, urinary bladder, gall-bladder and solid viscera; perforating appendicitis; perforating ulcer of the stomach; perforating typhoid ulcer; purulent collections in the pelvis; and tubercular peritonitis.

In his remarks on "The Operating-Table," Mr. Smith recommends that this should be according to the height of the operator, if he is to stand, and tall enough to secure him against spinal strain or muscular fatigue. This will require several inches to be added to the height of an ordinary house table. He still recommends a rubber covering for the abdomen, with a large opening to operate through, the edges of which are to be made adherent by plaster material. This has been suspended here, by the use of a rubber receiver with apron-conduit, to be placed between the patient and the table, to catch discharges, ovarian fluid, irrigating water, etc.; which it does effectually, and keeps the woman and table from being soiled, except where the body is uncovered and may be easily wiped clean and dry.

Ether is recommended as an anæsthetic, an exception being made in favor of chloroform for old patients and bronchitic subjects. The use of morphia is objected to for the after-treatment, in all cases where it can be avoided, as "it lowers the functional activity of the intestines and favors the production of tympanites." "The patient is always brighter and better without it."

The author objects to the use of "cold water, and particularly ice to suck," for allaying thirst, and recommends warm water instead, as less likely to provoke emesis. We do not think this plan, prevalent here many years ago, would suit in our climate, or the subjects to be treated. His recommendation to allay thirst by a warm water enema is excellent, and will be found particularly useful where there has been much blood lost, to give rise to it.

We are glad to see that Mr. Smith gives Dr. McDowell due credit as the first ovariologist, and that he entirely disagrees with Mr. Tait in his attempt to establish the claim for Houston, whose report does not show that he tied the pedicle or removed a tumor. If Houston had been the American instead of McDowell, no doubt the claim of the former would have been measured differently against that of the latter.

Under the heading of "Fallopian Pregnancy," the author says, "Most men are now agreed as to the truth of Tait's opinion, that all examples of extrauterine gestation are in the beginning either wholly or partially Fallopian." We find it much more difficult to account for certain ectopic pregnancies, where the placenta has no pelvic connections, upon this basis, than to believe that the growth has been *ab origine* abdominal; and we see no reason why an ovum may not fall into the

peritoneal cavity instead of the funnel-shaped end of the oviduct. Mr. Smith doubts the ability of a gynecologist to diagnose a tubal pregnancy before rupture, which is not in correspondence with the views of many able men here and in his own country. Dr. Aveling, particularly, holds to the opposite opinion, and denies the danger of electricity in destroying an early ectopic foetus; the results of forty American cases show that the danger is far less than by any other foeticidal method.

In the chapter on "Cæsarean Section," our author says, "There is little doubt that it was practised among the Jews from very ancient times." This, our best Jewish medical scholars who have examined their records critically, deny. Simmons is quoted (1799) as holding to the belief that the operation in 1500, at Siegerhausen, was upon an ectopic case. This would have been a far greater feat at that day than the performance of gastro-hysterotomy, in which five, out of a list of six women, have been successful in operating on themselves, and two more upon other women.

On page 295, the United States is credited with 124 Cæsarean operations; it should be 170. Great Britain with 131 instead of 151; and it is stated "that 60 improved Cæsarean operations have been performed." In fact, there have been more than 100; 20 of them in the United States. The last 7, in New York and Philadelphia, saved 6 women.

Abdominal exsection of the living and viable ectopic foetus has been performed thirty times, with five recoveries; four women were saved out of the last ten. Total exsection of cyst and placenta when possible is an essential of success.

Limited space will not permit of a more extended critical examination and notice. As we anticipated in our last review, the first edition very soon went out of print; and a second was demanded long before it could be prepared. The second is quite superior to the first edition, and is a much more comprehensive treatise. The new operation on *hysterorrhaphy*, of Olshausen, Sänger and Kelly, has not been described. It has been tested here by Prof. Lusk and Dr. C. C. Lee, who are pleased with its prospective merits. Mr. Smith has certainly produced a valuable work; much the best of its kind in the English language, and particularly acceptable to students in abdominal operations preparing for some special case.

R. P. H.

NOUVELLE MÉTHODE DE TRAITEMENT DE LA DIPHTHÉRIE. Par le Docteur GUELPA, Membre de la Société de médecine pratique; Membre correspondant de la Société de climatologie algérienne. Paris, 1887.

THIS "new method" consists essentially of repeated irrigation of the affected parts. The solution employed by Dr. Guelpa, in his cases, was composed of perchloride of iron, 5-10 parts per 1000; but, believing his results to be largely, if not solely, due to irrigation, he admits that solutions of other substances, such as boric and carbolic acids, might be quite as efficacious as that of the iron salt. The instrument employed is a syringe, and when the application is made to the pharynx the nozzle is slipped along between the cheek and the dental arch, the fluid passing in behind the last molar. By this manœuvre, the forcible opening of

the mouth is rendered unnecessary. In washing out the nasal passages, the injection is made through one of the nostrils with sufficient force to cause its return through the other.

The author's first experience with this method was obtained at Sétif, in Algiers, where a severe epidemic of diphtheria followed in the wake of one of scarlatina, and prevailed extensively during 1878, 1879 and 1880. In these cases, more than 200, the percentage of mortality was about 15, and this favorable result was obtained in spite of the fact that among them are included : 1. Cases in which the nasal fossæ were filled with false membranes, and impermeable to injections when first seen. 2. Cases which were seen for the first time only a few hours before death. 3. Children at the breast, and those who, at the first visit, were suffering from diphtheria of the larynx.

Guelpa claims that, by this method faithfully carried out from the beginning, the mortality can be reduced to less than ten per cent.

Believing the method to possess great prophylactic value, he advises that the nasal passages be washed out, even when the disease is limited to the pharynx, and states that in families in which not only the patient, but the healthy members, used the injections, the disease did not extend to the latter.

The author was given an opportunity to test his treatment in one of the hospitals of Paris (l'hôpital Trousseau), the result being a mortality of 9 out of 19 cases. It is, however, only fair to add that obstacles were placed in the way of its thorough application, and that, after an analysis of the cases, Guelpa contends that there was, in reality, but one case in which the treatment could be truly said to have failed. Certainly the method is well worthy of a trial in a disease in which, so far as treatment is concerned, there is so much to be desired. F. P. H.

A MANUAL OF THE OPERATIONS OF SURGERY, FOR THE USE OF SENIOR STUDENTS, HOUSE SURGEONS AND JUNIOR PRACTITIONERS. By JOSEPH BELL, M.D., F.R.C.S., Consulting Surgeon to the Royal Infirmary, and Surgeon to the Royal Edinburgh Hospital for Children. Sixth edition, revised and enlarged. Illustrated. 12mo. pp. 326 and index. Edinburgh: Oliver & Boyd, 1888.

THIS manual of the operations of surgery, though less profusely illustrated than could be desired, otherwise admirably fulfils the author's aim in compiling it. He has wisely and clearly carried out his object, "to describe as simply as possible those operations which are most likely to prove useful, and especially those which, from their nature, admit of being practised upon the dead body."

The author has been most judicious in keeping his book free from all mention of methods of wound treatment and of dressings and appliances. Only the actual steps of operation, as a rule, are described, but, here and there, a few well-chosen words, in regard to choice of operation, symptomatology and history, are introduced. Very many modern and radical operations receive no mention or reference, but possibly the

author did not regard some of them as coming within the scope of his work, as he, in the preface, distinctly disclaims any attempt to have the book complete. No instruments are pictured, and for them the author refers the reader to the illustrated catalogues of the instrument makers.

The first few pages of the volume are taken up with very useful, full-page illustrations of a man in various stations, upon whom are drawn the lines of incision for all ordinary operations. Then follow excellent chapters upon ligations, amputations, excisions, etc., including brief synopses of the conventional operations upon the special organs, abdomen, chest, bladder, etc.

All of the statements which are to be found in the book cannot be allowed, however, to pass without challenge. Thus, for instance, the author has seen fit to introduce statistics, and to base upon them arguments and conclusions. With these statistics we must find most serious fault, for they are ancient—that is, preantiseptic: a common source of grave error in nearly all books—perhaps excusable, in part, by lack of great aggregations of cases treated by modern methods, but sufficient numbers *have* already been published for authors to make at least a start in the right direction. By one or two transgressions of the set limits of the work, opportunity is given for other challenge, for, in speaking of excisions, the statement that “synovial membrane, however gelatinous or thickened looking, really requires very little care or notice” is entirely contrary to the principles of modern surgery and the teachings of pathology, which could not better be proved than by the description in the same paragraph of what follows if the recommended plan of treatment is adopted. “It” (the synovial membrane) “will disappear of itself, partly by sloughing, partly by absorption during the profuse suppuration” which is expected to follow. The old-fashioned crucial incision for trephining and other purposes is put forward as the best, whilst the latter operation is recommended for performance only when there are symptoms of compression present, even though the fracture be a punctured or compressed one. Viewed, as a whole, the work is to be highly commended, and its place will be amongst the very best of its class.

T. S. K. M.

DISSOLUTION AND EVOLUTION AND THE SCIENCE OF MEDICINE: AN ATTEMPT TO COÖRDINATE THE NECESSARY FACTS OF PATHOLOGY, AND TO ESTABLISH THE FIRST PRINCIPLES OF TREATMENT. By C. PITFIELD MITCHELL, M.R.C.S. England, Author of the Treatment of Wounds as Based on Evolutionary Laws. London: Longmans, Green & Co., 1888.

THE object of this book is “to disseminate some new applications of Mr. Herbert Spencer’s leading generalizations. The sustaining elements of the sympathetic philosophy are the doctrines of evolution and dissolution. The design is to inquire whether these may not be made fertilizing principles for large collections of the data of pathology, and thus the means of practice for the physician and surgeon. . . . To make all diseases from a whitlow to mania one in principle, by cause and effect, is an aid to thought.” That such a consummation is desirable will be granted. The difficulties of approximating any collection of

facts and theories to a philosophical system must depend on imperfections in both parts. In the present instance there is no attempt to involve the doctrines of Mr. Spencer in all their bearings; and as the accuracy of the definitions of evolution and dissolution as abstractions cannot be questioned, want of success must depend on the limitations of pathology.

A careful study of the volume shows that the author has succeeded in his task to a remarkable degree. Beginning with general processes, inflammation and suppuration are shown, as far as can be demonstrated at present, to have all the characteristics of dissolution, that is, "disintegration of matter and concomitant absorption of motion; during which the matter passes from a definite, coherent heterogeneity to an indefinite, incoherent homogeneity; and during which the retained motion undergoes a parallel transformation." Local anæmias, hyperæmia and hemorrhage are also shown to be dissolutorial processes. Resolution and repair are then studied as evolutionary changes, or those in which there is an "integration of matter and concomitant dissipation of motion; during which the matter passes from an indefinite, incoherent homogeneity, to a definite, coherent heterogeneity, and during which the retained motion undergoes a parallel transformation." These translations are so natural as to require no detailed explanation of the proofs cited.

Coagulation of the blood, thrombosis and embolism, gangrene and coagulation-necrosis and some other metamorphoses may also be passed over as easily understood from the terms.

The changes induced by vegetable and animal parasites, being for the most part inflammatory, are naturally assigned to the dissolutions. The infective tumors, or *granulomata*, having a tendency to the formation of cicatricial tissue, their life history "shows alternations of dissolution and evolution." By a curious oversight it is said (page 62) that the nature of the agent producing glanders is unknown.

A great deal of space, as we should expect, is devoted to the neoplasms other than those just mentioned. To show that they are subject to the general rules is not very difficult, but the author has studied them from so many points of view, and some of these so novel, as to make it one of the most interesting chapters in the book. To give even an outline of this part would lead us beyond the limits of this article, and we must content ourselves by referring the reader to the original.

Nowhere is the value of the leading principles better shown than in the part on special diseases, where the observance of the rules leads to the rejection of the old theory of sclerosis, fibrosis and cirrhosis, and the acceptance of the one undoubtedly correct, and now gaining ground, that the growth of connective tissue in chronic affections is evolutionary, not an inflammatory process.

Curiously enough, the author has left the inviting field in pulmonary diseases furnished by the microorganisms, and has taken up the view—we must admit greatly improving it—that the condition of the pulmonary arterial blood is of radical importance in pneumonia as well as in phthisis. Although the arguments are plausible, and we would not deny a predisposing influence to the altered blood, we think the author underrates the microbic factors in the common pulmonary diseases. Certainly nothing would be more natural and satisfactory than to look on phthisis as a series of dissolutions and evolutions simultaneous and

successive, due to causes from without. Remarks on nervous and mental diseases and certain fevers and diathetic diseases end this part of the work.

A short section on heredity and disease discusses this vexed and intricate question in a critical and conclusive manner, and it is shown why diseases are, for the most part, refractory to transmission by descent. Finally, a study of "organic equilibrium" leads to a recognition of the *vis medicatrix naturæ*, its tendencies and limitations, and the necessity for the study of causes and their avoidance or removal in the treatment of disease.

Conceived in a broad and scientific spirit, this book is carried out with a recondite knowledge of facts and theories thoroughly in keeping with it. Instances of special pleading are rare, and, as a rule, when the author has failed in making good his object, the fault has been due to the limitations of pathological science. On the other hand, this science receives a new and fascinating aspect, and many fresh fields of view are opened up by a study of "dissolution and evolution."

The book is gotten up in a degree of luxury uncommon among works of its class.

G. D.

STUDIES IN PATHOLOGICAL ANATOMY, ESPECIALLY IN RELATION TO LARYNGEAL NEOPLASMS. Part I. PAPILLOMA. By R. NORRIS WOLFENDEN, M.D. Cantab., and SIDNEY MARTIN, M.D. Lond. London: J. & A. Churchill, 1888.

THIS appears to be the first of a series of contributions to the pathology of the larynx. Part I., after some preliminary remarks, gives a concise and accurate description of the etiology, clinical course and terminations of benign new growths of the larynx, and then takes up the subject of papilloma. The methods of examination of these growths are clearly described, and the pathological anatomy presented in terse and vivid language. The important questions of diagnosis between these growths and epithelioma, and of the degeneration of papilloma into epithelioma, are promised discussion in connection with the latter disease.

The plates illustrating this fasciculus cannot be too highly praised. Not only are they beautiful works of art, but their histological accuracy is beyond criticism. Should the work be completed according to the promise of Part I., it cannot fail to form a valuable addition to the study of pathological anatomy as well as laryngology.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
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GLYCERIN AS A LAXATIVE ENEMA.

All observations agree as to the satisfactory and even brilliant results of this use of glycerin. First, ANACKER (*Deutsch. med. Wochenschr.*, 1887, p. 823), having discovered that "das Purgativ Oidtmann," a proprietary medicine of much renown, and likewise given by enema in quantities of from xx to xxx m , was mostly glycerin, tried this substance alone. With enemata of fifty drops his success was complete and unvarying. After him, VARNOSSY (*Wien. med. Presse*, 1887, 48, and *Ther. Monatshefte*, March, 1888, p. 140) made trial of it in 150 cases of all ages, with "astonishing" results, using m xxx. Next SEIFERT (*Münch. med. Wochenschr.*, 1888, vol. i. 9) reports having always seen the best results; he uses 3j on an average. In smaller quantities he recommends it especially for children. Finally, BOAS (*Deutsch. med. Wochenschr.*, June 7, 1888, p. 469) has had the same gratifying success with suppositories of glycerin, which, from being readily handled, etc., have advantages over the syringe and injection, if equally efficient. Boas uses some special form of hollow suppository in which m xv are placed. The dejection follows in fifteen to twenty minutes. Thus these observers agree in recording remarkable success. Glycerin seems to act *cito, tuto et jucunde* and to have added to our resources. No one has anything to record against it except that it cannot be used when there is ulceration. Neither the injection nor the movement causes pain, and, according to Seifert, no tolerance is established. The movement should take place within half an hour.

CALOMEL AS A DIURETIC.

Among many observations on this use of calomel as a diuretic, PROR. NOTHNAGEL makes the following communication to the *Ther. Monatshefte* (May, 1888, p. 263). After extended experience, he declares calomel to be "extraordinarily valuable" in the dropsy of heart disease; on the contrary, ineffective in the dropsy dependent upon renal or hepatic affections.

His formula is:

R.—Hydrarg. chlorid. mitis gr. ijss.
 Sacchar. lact. gr. viij.

Take ten such powders at the rate of four a day.

The urine does not begin to increase till the third or fourth day. Nothnagel has seen an amount previously $\bar{5}x$ rise to $\bar{3}clxv$ to $\bar{3}ccxxx$! After reaching the acme it sinks again in the next eight days. After a rest of two to four weeks the treatment may be repeated. Should no result follow in four days, the administration is stopped and resumed after eight days. In case of a second failure this treatment is given up. The mouth needs especial care.

In the main, these statements accord with those of ROSENHEIM, to whom we owe the revival of this old remedy (*Deutsch. med. Wochenschr.*, Nos. 16 and 17, 1887). He gave the same dose, t. i. d. The first effects were observed on the third or fourth day, when the remedy should be stopped. Both increase and decrease are rapid. In only a few cases could Rosenheim obtain a second diuresis on repeating the remedy. Out of sixteen cases he had stomatitis in ten, diarrhœa in eight. Other mercurial preparations are diuretic, but calomel is the best. The condition of the diuresis, according to Rosenheim, is mercurialization—i. e., the absorption of mercury into the system, as proven by its presence in the secretions.

ANALGESIC USE OF ANTIPYRIN.

GÜNTHER (*Deutsch. med. Wochenschr.*, May 17, 1888, p. 406) has made much use of a thirty to fifty per cent. solution subcutaneously. In a case of fresh fracture, an injection made at its seat, deep into the tissues, enabled him to apply the first apparatus without the slightest muscular contraction. It has been of great service in laryngeal phthisis with cough and loss of sleep.

BERDACH (*Wiener med. Wochenschr.*, 1888, No. 11) says a fifty per cent. solution in distilled water is adapted to all painful conditions. The effect appears in a few seconds and lasts at least six hours.

ON THE USE OF CODEINE TO RELIEVE ABDOMINAL PAIN.

The fact that many practitioners still prefer opium to morphine in the treatment of abdominal pain, led LAUDER BRUNTON (*British Medical Journal*, 1888, i. 1213) to question whether some other alkaloid was not more powerful than morphine in cases of this sort. Barbier, in 1834, found that codeine had an especial action in lessening pain from irritation of the solar plexus, while it did not disorder digestion, and rather aids the action of the bowels. The son of Robiquet, the discoverer of the drug, made some observations which did not agree with those of Barbier, but the disagreement may have depended on some impurity. Berthé confirmed Barbier's views, and found that the drug lessened the irritability of the intestine very greatly. Brunton concludes from these experiments that codeine is likely to be of value in relieving abdominal pain, and has employed it with great success especially in painful affections of the intestine and lower part of the abdomen. It is particularly valuable where morphia is to be avoided on account of the condition of the heart or lungs, or where it is desired not to interfere with the action of the bowels.

On the other hand, where there is much diarrhœa it is not so serviceable as morphia or opium, because it does not lessen peristaltic movement. It can be pushed to a much greater extent than morphine without causing drowsiness. The dose employed is one-half to one grain in pill, given as often as needed.

ANTIPYRIN IN CHOREA.

Additional contributions on this point will be found in the *Therapeut. Monatshefte*, April, 1888, pp. 177 and 191, and May, 1888, p. 249. Though the cases are few, the observers agree as to the benefit of the remedy. In a child of eight, gr. viij have been used. One reporter has used a fifty per cent. solution subcutaneously, beginning with half a syringeful and increasing to two in twenty-four hours.

PAINLESS TOOTH-DRAWING.

HÉNOQUE and FRÉDOT, before the Société de Biologie, of Paris, drew attention to a plausible and neat application of a physiological principle. An atomized ether spray, directed on the region about the external auditory meatus, will produce through the distribution of the trigeminus an anæsthesia quite sufficient to annul the pain of drawing teeth.—*Ther. Monatshefte*, March, 1888, p. 144.

To the usual cocaine solution, injected between gum and tooth, MARTIN (*Lyon Médicale*, 1888, No. 1) has added antipyrin. The anæsthesia is as complete and lasts longer, though slower in coming on. It has the additional advantage of diminishing the amount of cocaine used and the risks in consequence. The percentage of cocaine is four, of antipyrin forty, in distilled water. Martin affirms of this mixture a quick influence over the pain of acute periostitis.

PHENACETIN—A NEW ANTIPYRETIC.

This chemical product, brought to the attention of the profession a year ago by KAST and HINSBERG (*Centralt. f. med. Wiss.*, 1887, No. 9), has been tested by a number of observers and seems to be of great promise. It is a tasteless powder, almost insoluble in the usual solvents; hence, is to be given in capsule or placed on the tongue. The latter way is agreeable enough, even in children, because it is absolutely tasteless. Given to a healthy individual, in quantities of gr. xxx to gr. xlv in a day, absolutely no bad effect has been noted (RUMPF, *Berl. klin. Wochenschr.*, June 4th, p. 457). Neither have unpleasant symptoms accompanied its administration in disease. As an antipyretic, Rumpf finds it absolutely reliable and without drawbacks. In doses of gr. viij, and with half that quantity in children, he saw the temperature constantly fall from 3.6° to 5.4° F. Used as an analgesic, it showed itself decidedly useful. Rumpf prefers phenacetin to antipyrin and antifebrin, on account of its greater effectiveness and the absence of unpleasant after-effects.

A NOVEL EXTENSION OF THE ANÆSTHETIC USES OF COCAINE.

E. HURRY FENWICK (*Lancet*, 1888, i. 871) discovered accidentally that cocaine applied to the urethra relieved a patient of neuralgic pain of the face

and limbs. Experiments on frogs convinced him that this would generally be the case with pains of this sort, but that more severe pains, as those of carcinoma and inflammation, would probably be uninfluenced by it. The clinical test in over 100 cases of neuralgic pain in various parts of the body fully corroborated this, and the author reported several instances in which facial neuralgia, wry neck, intercostal neuralgia, pain in the legs, etc., were surprisingly relieved in a few seconds or minutes by a urethral injection of twenty or thirty drops of a twenty per cent. solution of cocaine.

MEDICINE.

UNDER THE CHARGE OF

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ON THE TREATMENT OF TYPHOID.

A very suggestive and comprehensive clinical lecture of ZIEMSEN's on the treatment of typhoid fever will be found in *Centralblatt f. gesammte Ther.*, March and April, 1888. His remarks on diet and the temperature are especially interesting. Nitrogenous matter should not be omitted from the diet any more than in health, because Bauer and others have shown that it does not increase the fever and is in great part absorbed; while carbohydrates are especially well taken by patients. Only liquid food is allowed, and especial care should be taken throughout the sickness for changes in taste and consistence. Oatmeal and barley gruels are recommended for continued use—many variations may be given their taste by flavorings. Soups he also gives freely—but they should be carefully strained and freed from any particles. Plain stock, with or without the yolk of egg, meat extracts, meat juice, etc., are excellent. Milk Ziemssen praises as a superior article, but limits the amount to one pint per diem, warning against too great quantity. Raw beef-juce he uses as a routine article, and warmly commends. It is pressed from the raw beef—keeps twenty-four hours on ice and in porcelain, and shows six per cent. albumen; one drachm is given at a dose, and five or six teaspoonfuls in twenty-four hours. Two drachms may be added to a pint of soup (which should not be hotter than 147°); a small quantity of Liebig's beef extract improves the taste. When the stomach rejects food an ice made with beef-juce is well borne. It has the advantage over egg (alb.) that it does not create disgust in the patient. To broths Ziemssen adds beef extract in very small quantity, both for taste and stimulating effect on the nervous system. If eggs are given, three a day, as a rule, are enough.

For the fever Ziemssen especially recommends the lukewarm bath gradu-

ally cooled. The patient sits in a bath of 87° – 92° , and the water is kept in constant motion and splashed continuously on the parts out of water. It is to be cooled down about 10° by cold water poured on to the patient's feet. The duration of the bath should be not under fifteen minutes, nor over thirty. This form of bath is suited for most cases. The very cold bath Ziemssen condemns as causing too great shock, but he does use as low a temperature as 67° , being guided by the fever and nervous disturbance. A warm bath Ziemssen has found very beneficial in the adynamic state. Of the use of antipyretics, strange to say, Ziemssen says nothing, barely referring to antipyrin as preferable to other antipyretics.

THE VALUE OF SALOL IN ACUTE RHEUMATISM.

J. R. BRADFORD (*Lancet*, 1888, i. 1072) reports his experience with salol in about sixteen cases of acute rheumatism, all of average severity, with considerable fever. After detailing some of them, he concludes that, as an antipyretic, salol is decidedly efficacious in rheumatic fever, but only after three or four days, and when ten grains every hour are administered; and it is not quite so reliable as salicylate of soda. To relieve the joint pains it is decidedly inferior to salicylate of soda, both in certainty and in rapidity. Relapses occurred as after the salicylate, but yielded to increased doses of the drug. It produces the characteristic toxic symptoms of salicylic acid, though to a less marked degree. That in some cases it was tolerated by the stomach when salicylate of soda was not, is probably to be accounted for by the fact that less of the active principle is contained in it, and the dose was, therefore, proportionately smaller. The same fact explains the less degree of the other toxic symptoms.

The author concludes that the efficacy of salol depends purely on the contained salicylic acid, and that salicylate of soda is on every ground to be preferred to it.

THE ACTION OF ACIDS AND ANTIPYRIN IN THE TREATMENT OF SICK HEADACHES.

To DR. ALEXANDER HAIG, of London, we owe some very valuable observations upon the relationship of various forms of megrim to the presence of an excess of uric acid in the blood, and the effects of acids and alkalies upon this condition. He has shown (*British Medical Journal*, January 14, 1888) that during a headache uric acid is excreted in excess in the urine, and probably also exists in excess in the blood; and that as acids have the power of diminishing the excretion of uric acid, it is possible to relieve the cases of megrim dependent on this condition of excess, by a large dose of some acid, as nitrohydrochloric. The action of antipyrin, now so largely used in the treatment of megrim, Haig explains (*British Medical Journal*, May 12, 1888) by the fact that the drug acts like an acid, and hence diminishes for the time the excretion of uric acid. He found that a dose of twenty grains raised the acidity of the urine within the first hour of taking it, and that the rise continued and increased for five or six hours more. A drachm taken in three doses caused a marked increase in the acidity of the twenty-four hours' urine, and a decided fall in the uric acid excretion.

SALICYLATE OF SODIUM IN HEADACHE.

LITTLE highly extols this drug in what he calls migrainous headache—severe, accompanied by nausea and essentially neuralgic—though not typical migraine (sick headaches). Up to October, 1885, he knew of no remedy with a distinct influence on the paroxysm. Commencing then with the salicylate, it has been his mainstay in treating a large number of cases, with “strikingly beneficial” effect. In the discussion several gentlemen who had used the remedy at Little’s suggestion endorsed his claims, one man’s experience counting thirty cases.

R.—Sod. salicylat. gr. xx.
Effervesc. cit. caffeinæ ʒij.

To be taken at the earliest premonition and repeated once or twice at two hours’ interval, if necessary. The caffeine makes it more palatable, and is, no doubt, an adjuvant, although not the efficient agent, as a previous futile use of it in some of the cases proved.—*Dublin Med. Journ.*, June, 1888, p. 489.

GASTRIC EPILEPSY.

WYNNE (*Dublin Journ. of Med. Sci.*, 1888, 384) reports a case of epilepsy developing at seventeen years of age, and lasting six years. Some months before the age of onset he had had an attack of scarlatina, and at the age of three years he suffered from cerebro-spinal meningitis, which was followed by violent general chorea. The epileptic attacks appeared nearly always to be induced by the ingestion of some article of food which disagreed with him. The attacks were very frequently preceded by nausea, giddiness and confusion of mind, and were often followed by vomiting. The great majority took place during or immediately after dinner, while still in the dining-room. Recovery finally followed the prolonged use of the iodide and bromide of potash. It was also found that the attacks could be abbreviated by pinching, slapping, etc., or by anything which kept the attention of the patient excited. It would seem very probable that the early meningitis and the chorea had impaired the nutrition of the motor centres, and left them with a predisposition to further disturbance under the influence of another exciting cause. The author then discusses some of the remarks by various writers on the subject, and lays stress on the importance of a dietary regimen in the treatment of the disease.

PARAMYOCLONUS MULTIPLEX.

F. R. FRY (*St. Louis Cour. Med.*, 1888, 487) makes a short review of the characteristics of the cases which have been hitherto published, and reports a new example of the disease. The patient, aged thirty, had always been well. For some years she had been continuously engaged in running a sewing-machine. The disease commenced about three months previously to the time of examination, since which time the attacks became more and more frequent, and finally occurred once or oftener every day. The symptoms consisted in a clonic spasm of the muscles of the thighs, and sometimes of the arms, shoulders, abdomen, legs and those of respiration. The patient was unable

to restrain the movements, and the effort to do so only produced fatigue. The motions were so violent that the feet tramped the floor with force, and the body jerked about in the chair. The seizures lasted for a few minutes, and repeated themselves frequently at intervals of a few minutes. A sharp blow on the thighs would usually induce an attack. Twice she has had attacks immediately on getting into a cold bed. They sometimes began and ended with a few deep, sighing respirations. During three months of treatment gradual but steady improvement took place; the drug having the most effect being chloral, though hyoscyamine and antipyrin were not without benefit.

TREATMENT OF PLEURITIC EFFUSIONS.

FÜRBRINGER (*Berl. klin. Wochenschrift*, 1888, Nos. 12-14), from careful observations in a series of twenty-five cases, established the following relations between siphon action and aspiration (suction) in removing fluid from the chest—first allowing what would run off by siphon action and then determining the amount that could be got beyond this by aspiration (in all cases no forced exhaustion was used, and the total amounts obtained were only moderate—Fürbringer is no believer in strong suction nor does his instrument admit of it).

In 11 cases the quantity secondarily removed by suction was less than one-tenth of the whole amount.

In 10 cases from one-tenth to one-third of the whole amount.

In 4 cases from one-third to the whole amount.

Thus, on an average, in ten per cent. of the cases the siphon fails to remove one-half the exudation, and in some of the cases the main part cannot be obtained except by aspiration. In one of the cases the siphon obtained none, but aspiration $\frac{5}{8}$ xvij. On the other hand, in two cases of $\frac{5}{8}$ lxx and $\frac{5}{8}$ xxx, the siphon exhausted the whole.

Of 70 cases, in which the combined method was used, two-thirds left the hospital without its repetition being necessary. In 10 of the remainder needing a second removal, Fürbringer tried siphonage alone, and found 6 of them so tedious that even the attendants remarked their long stay, and repeated operations were necessary in these 6. Fürbringer's conclusion is, that in a considerable number of cases, suction (aspiration) is a factor in healing, to neglect which is a "sin of omission."

Fürbringer has constructed an instrument which allows both siphonage and the vacuum. It is on the principle of the ordinary wash-bottle of the laboratory. The long glass tube is connected with the trocar by a yard long piece of rubber tubing. The operator uses another piece of tubing fastened to the short glass tube through which to suck. Three ounces of an antiseptic fluid are first drawn into the flask. After the trocar has been plunged in and the bottle connected with the canula, slight suction with the mouth exhausts the air in the tube between bottle and canula, so that on turning the cock of the canula the fluid flows by siphon action. After this ceases a little suction by the mouth establishes a vacuum sufficient to reestablish the flow.

RHEUMATIC PNEUMONIA.

In a lecture at St. Mary's Hospital CHEADLE (*Lancet*, 1888, i. 861) said that he had always considered that pneumonia in the course of acute rheumatism

is of very rare occurrence, and a search through the recorded cases of the hospital confirmed this opinion. In the summer of 1887, however, there were 26 cases of rheumatism in the hospital, in 6 of which extensive pneumonia developed, preceded in 5 instances by pericarditis. These all exhibited a strong resemblance to each other, and the author reports them in full. In remarking upon them he states that in 4 cases the interval between the onset of the pericarditis and that of the pneumonia was six to seven days. In one instance it could not be determined with accuracy, and in the instance in which no pericarditis was noted, it may have been present but undetected. In 4 of the 6 cases there was old-standing valvular disease, and in the other 2 it developed during the attack. These cases of rheumatic pneumonia differ from ordinary lobar pneumonia in certain important particulars. In every instance it was the lower lobe of the left lung which was first involved, instead of the right, as is ordinarily the case. In 3 cases there was later a similar affection of the right. Cough and expectoration were entirely absent, and crepitation less abundant than in most cases of ordinary pneumonia, and in the first case was not detected at all. Finally, the temperature fell by lysis in all the cases.

These differences in the physical signs and symptoms indicate that the morbid condition of the lung in rheumatic pneumonia differs in some way from that of the ordinary form. This may be due in part to the presence of organic heart disease, of pericarditis, and possibly of myocarditis, embarrassing the heart's action and causing a rapid transudation of fibrin in a highly fibrinogenous condition. But this throws no light upon the transfer of incidence from the right lung to the left, and the author sees no explanation for it. Again, there must have been some immediate exciting cause for this exceptional outbreak, since diseases of the heart are common enough in the course of rheumatism. The most rational explanation is that during this summer the weather was excessively hot, and the wards were ventilated with unusual freedom. Rheumatic patients are very susceptible to cold, and it is reasonable to suppose that the chilling from strong currents of air streaming in from windows and ventilators might easily determine the development of inflammation of the pericardium, lung or pleura in the existing physical condition of organs so favorable to its production.

A few useful, practical hints may be deduced. First, whenever pericarditis, or sudden rise of temperature, or persistence of high temperature, or acceleration of respiration occurs in the course of rheumatism, make a careful physical examination of the chest behind as well as in front. Second, protect rheumatic patients carefully from draughts. This may well be done by the use of a canopy over the bed. Lastly, where pericarditis or pneumonia arises in the course of rheumatic fever, avoid the use of such drugs as salicylate of soda or aconite, which are marked cardiac depressants. Employ, rather, salicin or quinine, perhaps combined with citrate of potash.

THE TREATMENT OF PHTHISIS BY OXYGEN AND OZONIZED OXYGEN.

RANSOME (*Medical Chronicle*, 1888, viii. 37), after a course of experiments in several cases of phthisis, concludes (1) that pure oxygen without any admixture of air may be inhaled continuously for at least fifteen minutes without the least harm resulting, without producing inflammation or even

irritation of the air-passages, and without increase of fever or even of pulse-rate; (2) that 2000 to 4000 cubic inches of pure ozonized oxygen may be breathed not only without harm, but with apparent benefit in the cases in which it was tried; (3) that ozone diminished the number of bacilli, and sometimes the expectoration, and that the general condition of the patients was improved.

AFFECTIONS OF THE HEART IN TABES DORSALIS.

Influenced by the statements which have been made, to the effect that diseases of the heart, particularly of the aortic valves, were very liable to occur in tabes, and were in some way connected with it, GROEDEL (*Deutsche med. Wochenschrift*, 1888, 397) has during the last seven years examined his cases with especial reference to this feature. In one hundred and eight cases of this disease he found but four instances of valvular heart disease, and in none of them was there reason to believe that it was at all dependent on the tabes; and he concludes with Leyden that the occurrence of valvular lesions is purely accidental. He has never in this affection seen an instance of a diastolic murmur produced by irregular muscular action, as Angel has supposed. On the other hand, he has frequently noticed the occurrence of weakness and frequency of the heart's action, small pulse, palpitation, dyspnœa on exercise and sometimes, even, when at rest; but even these are not characteristic of tabes, and are liable to occur in any form of chronic disease accompanied by anæmia or neurasthenia. There may be a sense of oppression or of pressure in the region of the heart, which is probably to be classified as an irregular form of girdle sensation. Leyden has recently reported four cases of tabes in which there occurred peculiar attacks similar to those of angina pectoris, and Vulpian has also recorded a similar case. Groedel reports two such cases, as well as a third, in which, however, there was also hypertrophy of the heart and nephritis. It is very possible, as Leyden believes, that these attacks are directly connected with the tabes, and are neuralgic affections of the cardiac branches of the vagus; just as the gastric, laryngeal and bronchial crises represent a similar disorder of other branches of the same nerve.

THE CONNECTION BETWEEN DIABETES MELLITUS AND DISEASES OF THE HEART.

JACQUES MAYER, of Carlsbad (*Zeitschr. f. klin. Med.*, 1888, xiv. 212; also *Brit. Med. Journ.*, 1888, i. 949), says that the occurrence of attacks resembling angina pectoris, both in the initial and the more advanced stages of diabetes, has led him to make an examination of the physical condition of the heart in a large number of cases under his care during the last nine years. The whole number equals 380, of which 337 were in the first stage, and 43 in the second. The cases are further to be classified in three types, according to their general appearance: 1. Pale, feeble, delicate, anxious-looking patients. 2. Vigorous, healthy-looking patients, with florid, animated countenances. 3. Obese patients, some of whom are ruddy, some pale and sallow.

In the beginning of the complaint examination of the heart and vessels rarely shows any change due to the presence of sugar, or of an increased

amount of urea in the blood; but later in the disease changes occur whose nature depends on the type to which the patient belongs. In some cases of the first type endocarditis sometimes develops; in others there are the well-known symptoms of cardiac debility coming on suddenly without physical signs of change in the heart muscle or endocardium, and in still others the organ becomes dilated, and gives rise to severe dyspnoea and *delirium cordis* on the action of some exciting cause. In the majority of the cases of the second type there arise after a variable time the general symptoms and physical signs of idiopathic hypertrophy of the left ventricle. This condition may persist for years without much systemic disturbance; but when the nutrition becomes impaired, the heart becomes relaxed and dilated, and signs of cardiac debility appear. In a considerable number of cases of diabetes cardiac hypertrophy and dilatation develop without there being any morbid changes in other organs. This is due to the chemical irritation of the heart by the sugar and by the increased amount of urea in the blood. But the abnormal condition of the blood leads to changes in the urine, and this again usually induces alterations in the structure of the kidneys and disturbances of their functions, and it is in this latter way that the hypertrophy and dilatation of the heart, so frequently found in diabetes, are generally produced. The author has examined the records of the Pathological Institute of Berlin for the last thirty-two years and has found that thirteen per cent. of the cases of diabetes had hypertrophy and dilatation of the heart. Changes in the vessels in this disease are probably secondary to the affection of the heart. It seems evident that it is the morbid metabolism which is the active agent in producing the organic changes. As regards treatment, it is clear that everything should be avoided which may impair the action of the heart and kidneys, since organs which are in a state of hyperactivity easily become diseased; and it is on this account that a rigidly nitrogenous diet cannot, in all cases, be enforced.

THE TREATMENT OF THE CHRONIC DISEASES OF THE HEART MUSCLE.

After a very interesting discussion on this subject, OERTEL (*Therap. Monatshefte*, 1888, 201) draws the following conclusions concerning his method of treatment:

1. Only good results are obtained in the mountain resorts (*Terraincurorte*) in the latter stages of fatty heart, where there is no evidence of sclerosis of the coronary arteries, occurring usually in persons advanced in years, with serous plethora, venous congestion and often œdema. These good results consist in increase of the heart's strength, a regulating of its action, increase of albuminous matter composing it, and often a decrease of its amount of fat. There is also an increase of the general bodily powers.

2. There is further obtained by this method, in cases of valvular disease, or of obstruction to the pulmonary circulation, an increase of the muscle substance of the heart, and the production of compensatory hypertrophy.

3. Extensive non-compensatory dilatation, resulting from diminished strength of the heart muscle and increased intra-cardiac pressure, in not too chronic valvular lesions in young people, is made to disappear.

4. There is obtained the most complete possible adjustment between the

arterial and venous apparatus, together with increase of the quantity of blood and of the pressure in the aortic system, and diminution of cyanosis and of œdema.

5. Diminution and complete disappearance of disturbances of the respiratory apparatus, especially of the rapidly developing dyspnœa and oppression are obtained.

As regards the permanence of the good results produced through this dietetic-mechanical treatment, time only can decide; but the author has patients in whom the restored compensation has lasted at least twelve years.

LICHTHEIM's conclusions, in his address delivered on the same occasion as that of Oertel's (*Ibid.*, 211), are as follows:

1. Oertel's method is a sovereign means of cure for those forms of chronic heart disease whose genesis is due to intemperance in eating and drinking, and to lack of bodily exercise.

2. In those diseases of the heart, on the other hand, due to the dilating influences of immoderate bodily exercises, or other causes, this method is of no value. Bodily exertion is only to be allowed in moderation and when there is tolerable compensation, and it must never be allowed to produce much dyspnœa. This class of cases is to be treated much more carefully than are instances of real valvular disease.

3. The treatment with digitalis, strophanthus and caffeine remains the principal one for disturbances of compensation. Where the use of drugs fails, the dietetic method is also of no avail. Only in the removal of hydrosis is Oertel's method of real assistance to the treatment with drugs, though it can never take the place of the latter.

4. During the period of intact compensation the use of medicaments is superfluous, and Oertel's method, used in moderation, finds its true field.

ENDOCARDITIS FROM PNEUMOCOCCI.

HAUSHALTER (*Revue de Méd.*, 1888, 328) records an interesting case of pneumonia in which there were no symptoms at all pointing to an affection of the heart; and in which the post-mortem examination failed to reveal any important macroscopic change in it, except an almost invisible elevation at the insertion of one of the mitral leaflets. Section of another part of one of the mitral leaflets, however, showed, on microscopic examination, a mass of characteristic pneumococci in the centre of its thickness, and not reaching to the surface. There being no superficial destruction of tissue, these must have reached their seat by way of the capillaries supplying the leaflet. The pneumococci lying enclosed in the tissue might act as foreign, irritating bodies, and set up a sclerosing inflammation; and, in fact, on the surface of the leaflet over the focus of cocci there was a slight swelling, visible only with the microscope, which was perhaps of this nature.

The author concludes: 1. That in the infectious diseases, the absence of auscultatory signs during life, and of the visible lesions of ulcerative or verrucose endocarditis after death, does not always signify that the valves have not been attacked by the infectious germ. 2. That there perhaps exists a variety of chronic endocarditis whose point of departure has been the presence, at a certain time in the affected valve, of microorganisms pathogenic of an

infectious disease which was going on at the time. 3. That between the occurrence of the acute malady and the appearance of the cardiac symptoms, there may be a longer or shorter latent period, during which the attention of the physician ought to be directed to the possibility of the development of the cardiac disease.

THE DIAGNOSIS AND TREATMENT OF GASTRIC ULCER.

In discussing Gerhardt's lecture on this subject (see this Journal for June, 1888) GUTTMANN (*Deutsch. med. Wochenschr.*, 1888, 440) states his belief that the determination of the amount of HCl in the gastric secretion is of diagnostic value between gastric ulcer and carcinoma. His somewhat extended experience shows that in the last condition the quantity is always below normal, or entirely wanting; while the examination of ten cases of gastric ulcer always revealed an excess of HCl over the average amount normally present. For treatment he, therefore, recommends the employment of such agents as bicarbonate of soda to neutralize the acid.

SUBLIMATE ENTERITIS.

FRÄNKEL (*Deutsch. med. Wochenschr.*, 1888, 443) calls renewed attention to the fact which he announced two years ago, that the external use of the bichloride of mercury in the treatment of wounds was capable of calling forth a severe diphtheritic inflammation of the intestine, especially in debilitated individuals. This is most apt to occur when those portions of the body most capable of absorption are exposed; as the peritoneum or the inner surface of the uterus after parturition. The diphtheritic inflammation attacks the large intestine, and only exceptionally the ileum also. He denies altogether the claim of Sänger that calcareous infarcts in the kidneys are characteristic of this sublimate enteritis; since not only are they found in other conditions, but Fränkel has failed to discover them in any of the cases of this disease on which he has made autopsies. He states further that other forms of mercury, as well as the bichloride, are capable of producing the intestinal inflammation.

THE PROGNOSTIC SIGNIFICANCE OF THE BLOOD PRESSURE IN ACUTE RENAL DISEASE.

Though every form of renal disease is usually attended by increased arterial tension, BROADBENT (*Brit. Med. Journ.*, 1888, i. 840) has seen several cases of cirrhosis of the kidney in which the tension was low. In acute renal dropsy this is of more frequent occurrence, and it has always been associated with an intractable character of the disease. In this condition the artery is at first full between the beats, but the beat is short and easily arrested. This corresponds to a time of temporary dilatation of the heart, but in the course of a week or ten days the tension increases, showing that the heart has recovered itself, and constituting a sign of favorable progress. The absence of this increase may be due either to a persistent weakness of the heart, or to a relaxation of the arterioles and capillaries; both of which are of bad augury. The author reports a case in full, in which the prognosis was given that the disease would be of long duration, on account of the defective pulse-tension

and the weak blood-propulsion; and the result showed that the prognosis was correct. The imperfect development of the blood-pressure in these cases is not the cause of the slow recovery, but is merely the indication of the constitutional weakness which lies at the bottom of the delay. The development or non-development of blood-tension is further a guide in treatment, since to raise the tone of the circulation is to help to recovery.

SALINE PURGATIVES IN THE TREATMENT OF TYPHLITIS.

C. W. SUCKLING (*Brit. Med. Journ.*, 1888, i. 1112) reports two cases of typhlitis treated by a mixture of sulphate of magnesia and sulphate of soda. He believes that this plan of treatment is of great value in cases of typhlitis, or peritonitis due to fecal retention. In moderate doses the salts do not cause peristalsis, their action is quite painless and they wash away scybalous masses. The abdomen should be frequently examined during their administration, and stimulants administered if there is any evidence of accumulation of fluid in the intestines. This sometimes occurs on account of the lack of power of the bowel to expel the large amount of fluid which the saline aperient produces.

CONTRIBUTIONS TO THE PATHOLOGY OF CHYLURIA.

In the Proceedings of the Medical Faculty of the Imperial University of Japan (*Centralbl. f. d. med. Wissensch.*, No. 17, 1888) MURATA records observations made upon six cases of chyluria resulting from the presence of filaria. He recommends that the search for the parasite be made during a whole night or at least at midnight. Nearly all his patients passed bloody urine on rising and chylous urine toward evening, the amount of fat in the urine being greatly influenced by that taken as food. The embryo parasites may find an exit from the body in a number of different ways, besides through the urine; thus they have been found in the stools with chylous diarrhœa, in the discharges from the ruptured skin of lymphoid scrotum, and suppurated lymphatic glands, also in the tears, and in the blood from an hæmoptysis. [In every instance it is evidently rupture of the lymphatics which liberates the filaria.] Murata made the original observation, too, that the kidney may be the seat of the chyluria, for he found in the pelvis of one kidney a large coagulum filled with filaria, while no other lesion of the lymphatics of the urinary passages could be discovered. He concludes, as a general summary of his observations, that the symptom chyluria is the result of rupture of a lymphatic vessel in the urinary tract, resulting from the engorgement consequent to thrombosis of the thoracic duct from occlusion by embryo filaria.

Grimm, from observations made upon the case of a patient who had lived in Brazil for some time (*Virchow's Archiv*, vol. iii. p. 341), arrived at much the same conclusions as Murata regarding the cause of the symptom chyluria; namely, that it is the result of rupture of some lymphatic vessel in the urinary tract. Careful and systematic examinations of the urine, especially in relation to diet, lead to this result. He found that a diet rich in fat caused a perceptible increase in the fat contained in the urine within an hour and a half after ingestion. Also, that various heterogeneous substances reappeared

in the urine. Neither peptone, hemialbumose, nor sugar was ever found to be present.

ADULT FILARIA SANGUINIS HOMINIS.

It seems a little singular, considering how long the parasitic nature of chy-luria has been recognized and how many cases have been carefully studied, that so little is known of the life history of the *filaria sanguinis hominis* which causes it. Indeed, the adult worm has rarely been seen, and those described have been females. Prof. Bourne, of the Presidency College, Madras, reports in the *British Medical Journal* of May 19, 1888, having received two specimens of adult worms found in an amputated lymphoid scrotum of an infected patient. One of these was a female, agreeing closely in appearance with the figure given in Cobbold's work on parasites, published in 1879.

"The male specimen," he says, "is about an inch and a quarter long; the anterior extremity is wanting, but the caudal extremity is intact and presents two spicules. The structure of these spicules will doubtless form a valuable specific character. The spicule is broad at its proximal extremity, and gradually tapers until it becomes capillary in character. About half way down there is a lateral prominence, and when *in situ* the spicule is folded on itself, so that the prominence forms the actual free extremity of the spicule, while the broad end and the capillary end lie near to one another. It is interesting to note that in this case, as in Lewis's case, the male and female were in close contiguity."

SURGERY.

UNDER THE CHARGE OF

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DISINFECTION OF SURGICAL INSTRUMENTS AND DRESSINGS.

RENARD (*Revue de Chirurgie*, No. 6, 1888) shows that disinfection of sponges and instruments by a five per cent. carbolic acid solution is unreliable, many of the pathogenic organisms withstanding a soaking of from thirty to forty-five minutes. Bichloride he concedes is more powerful, but objectionable in many cases from its chemical action; for sponges it is to be preferred to carbolic solutions. Flaming, if thorough, is efficacious, but again restricted in its range of application. Boiling at 212° F. will destroy spores only if long continued. Steam at 230° F. destroys all microorganisms submitted to its action in thirty minutes.

Renard has devised for the sterilization of his instruments and dressings an apparatus similar to that used by bacteriologists. He uses a cylindrical copper boiler about an eighth full of water; baskets containing the instru-

ments, and provided with feet to raise them from the surface of the water are put into the cylinder, a lid containing a manometer and a safety valve is screwed in place, and by means of an alcohol lamp the water is raised to the boiling temperature. The air in the cylinder passes off by a stop-cock in the lid, which is then closed and the pressure is increased till it represents a temperature of 230° F. One-half an hour's exposure is sufficient for absolute disinfection. Sponges should not, of course, be subjected to this treatment, nor for instruments should the temperature be allowed to exceed 245° F.

Renard concludes his somewhat elaborate article with the following propositions :

1. Disinfection by means of steam compressed at 230° F., as applied in the apparatus described, is certain and practical.

2. Instruments or dressings submitted to this treatment for fifteen to twenty minutes are absolutely disinfected.

3. The apparatus is very simple, not dangerous, and can be trusted to a nurse.

4. Neither instruments nor dressings are in any way altered by a prolonged treatment if the temperature does not exceed 230° F.

MUCOUS MEMBRANE GRAFTS.

WÖFLER (*Deutsch. Gesellsch. für Chirurg.*, xvii. Kongress) reports some cases of mucous membrane transplantation which were as successful in sequel as Thiersch's more widely known transplantings of the epidermis. The mucous membrane was cut into thin strips of an inch to an inch and a half long and of a third of an inch broad. That taken from young persons grew best. The wound should be three or four days old.

In three cases of impermeable urethral stricture, the cicatricial tissues together with the urethra were excised. After three days the continuity of the urethra was restored by transplanted flaps of mucous membrane, and a catheter was left in the bladder to act as a mould for the new canal. The results were highly satisfactory. In other parts of the body the procedure was equally successful.

REMOVAL OF A TUMOR OF THE SPINAL CORD.

GOWERS and HORSLEY read, before the Royal Medical and Chirurgical Society (June 12, 1888), the medical and surgical histories of a case of removal of a tumor from the spinal cord. Paroxysmal agonizing pain increased on motion, paraplegia, spasm of legs, foot and rectus clonus, pain around the trunk and retention of urine, were the more gross features of the case on which Gowers founded his diagnosis. Horsley exposed the spinal column from the third to the seventh dorsal vertebra, cut off the spinous processes of the fourth, fifth and sixth; made his way through the lamina and ligamenta subflava, opened the dura mater in the middle line, and exposed the cord. No abnormality being found, a portion of the third dorsal vertebra was cut away, when the cord was found compressed by a tumor of the dura mater; this was readily removed; the wound was closed, and promptly healed by first intention. All pressure symptoms gradually disappeared; the patient remains entirely well.

LAPAROTOMY IN PERITONEAL TUBERCULOSIS.

KÜMMEL remarks (*Archiv für klin. Chirurgie*, vol. xxxvii.) that whereas, not very long ago, tuberculous peritonitis was only noticed by accident, as, for example, when abdominal section was performed on account of supposed ovarian disease or other abnormal abdominal conditions, yet now it is correctly diagnosticated and recognized as a local disease, as in tuberculosis of bones and joints. It is also, like them, treated by operative measures. He analyzes forty cases in which this condition was found, the patients ranging in age from four to fifty-six years, but the majority between fifteen and twenty. Most of the operations were based on false diagnoses. All but two were women. In the two males the condition was noticed incidentally while operating for ileus. Only in a few instances was the tuberculosis diagnosticated and the operation undertaken for its relief. As a rule, these cases all appeared to be cystic and consisted of collections of liquid between lymph bands, more or less organized. In a smaller proportion the tuberculosis was general. In no cases did the operation cause a hastening of the process, but, on the contrary, it always seemed to have a distinct ameliorating and retarding influence. He concludes that laparotomy may be regarded as a curative as well as a palliative measure in the treatment of abdominal tuberculosis.

FIXATION OF A MOVABLE LOBULE OF THE LIVER BY MEANS OF
LAPAROTOMY.

DR. E. A. TSCHERNING (*Centralblatt für Chirurgie*, No. 23) reports a case of "hepatorrhaphy" for pain and disability attendant on the pressure of a large, movable, constricted portion of the liver. The patient, aged thirty-six, previously at times a sufferer from icterus, noticed for five years a swelling on the right side of the abdomen, gradually increasing in size, and attended with such pain that she was incapacitated for her household duties; this pain being subject to remissions and exacerbations, but never entirely leaving her, of a darting, shooting character, relieved by rest in bed, but aggravated by motion.

On examination, a tumor was felt in the lower part of the abdomen, extending from the right lumbar region to somewhat within the nipple line, and from the anterior superior spinous process of the ilium to the curvature of the ribs. Percussion dulness of liver was continued into that of the tumor; the connection between the two could not, however, be detected by manipulation. Liver dulness extending to the fourth interspace in nipple line. Left lobe moderately enlarged. Tumor smooth, irregular on surface, firm, without pulsation, fremitus or friction sounds; free lateral movement; slight tenderness.

Diagnosis.—Hepatic tumor, possibly a liver constriction.

Operation.—Incision from twelfth rib to a point somewhat anterior to the anterior superior spinous process of ilium. Extraperitoneal exploration showed sound kidneys and an intraperitoneal tumor. Parietal peritoneum opened, some prolapsed gut replaced, and the tumor readily drawn to the wound. It was of firm consistency, grayish-white in color, and invested in a fibrous capsule. Exploratory incision showed interstitially degenerated liver tissue. Deep sutures stopped the bleeding from this incision. The tumor was found to be a constricted portion of the liver, firmly attached to its right

lobe by a broad pedicle. Fixation by means of two sutures sunk deeply into the substance of the tumor and fastened in the abdominal wall. To cause still more extensive adhesions the peritoneal wound was packed with tampons after Mikulicz's method; the posterior extraperitoneal portion of the wound being sutured.

At first there were slight jaundice and albuminuria and some high temperature, the latter shortly subsiding. Patient was up in four weeks with a superficial granulating wound. Two weeks later she left hospital; wound healed.

Condition after six months.—Occasional moderate dragging pains, relieved by a couple of hours rest. Feels well and attends to her housework.

CHOLECYSTOTOMY WITH LIGATION OF THE CYSTIC DUCT.

DR. ZIELEWICZ (*Centralblatt für Chir.*, May 31, 1888) believes the chief objection to simple cholecystotomy is, that it, as a rule, leaves a persistent fistula and often lessens the nutrition. He says that the "ideal" operation, cholecystotomy with suturing and return of the gall-bladder, has the danger of the rupture of the line of suture due to over-distention of a still partially elastic bladder. Besides this, if new stones form, the operation must be repeated. It seems that cholecystectomy is less dangerous than cholecystotomy. He cites one case in which he made an incision directly over the enlarged gall-bladder and parallel with the median line. A double ligature was passed around the cystic duct and this was cut between the two. The incision was too free and involved the liver substance, causing free hemorrhage, but this was stopped by the use of iodoform and pressure. The bladder was then freed as much as possible from the liver and stitched to the wound in the abdominal wall. Then it was incised and there escaped some bile and a rough mulberry-like calculus of the size of a walnut. The patient recovered. The author claims this as the first successful case of ligature and section of the cystic duct in a human being. The advantages of this method are:

1. Radical cure without a resulting biliary fistula and its consequences. The gall-bladder is excluded from the organism as in exsection. Its secretion, the product of its mucous membrane, diminishes in time because of the cessation of the biliary flow, and especially after the cavity has become obliterated by newly formed granulations.

2. The operation is simple and less dangerous than cholecystectomy and gives the same result.

CYSTONEPHROSIS.

Sacculated kidney is the title under which KÜSTER (*Deutsch. medicin. Wochenschr.*, 1888, No. 19) discusses the symptomatology and surgical treatment of hydronephrosis and pyonephrosis. These affections, regarded in the text-books as distinct, are of the same nature; they may develop one from the other, and cannot be distinguished from each other by either symptoms, or physical signs.

Küster has operated on thirteen cases of sacculated kidney, eight being completely and permanently cured. But two died, one from uræmia due to disease of both kidneys, one some time after the operation from tuberculosis.

In regard to the etiology of cystonephrosis the author notes that in all

cases the onset of this affection is characterized by pus appearing now and again in the urine. Pyelitis is the starting-point, which, causing a swelling of the mucous membrane, necessarily diminishes the lumen of the ureter and makes it incapable of carrying off the very free secretion from the kidney. Intra-renal pressure at once pushes the swollen mucous membrane, which is somewhat movable, toward the obstructed outlet and forms a fold which still further increases the trouble; as the swelling grows larger the orifice of the ureter may become twisted, or the ureter itself pressed upon, making the obstruction absolute.

In making the diagnosis the tumor must first be proved to originate from the kidney, then the operator must be assured of the nature of the affection with which he has to deal. In regard to its origin, the enlargement lies either in the kidney region, or can, if somewhat below it, be thrust back, bimanual pressure from in front and laterally locating it close under the twelfth rib. But slightly movable; not affected by respiration, this latter sign distinguishing it from a tumor of the liver or gall-bladder; also the fact that, except in very great enlargement, there is a zone of percussion resonance between this tumor and the liver.

A sacculated kidney may extend into the pelvis to such an extent that on superficial examination it would seem to rise from that cavity. A line of tympanic resonance can mostly be found separating the lower border of the tumor from the true pelvis. An important point in distinguishing pelvic tumors from this affection is the fact that the former give anteriorly, with very few exceptions, dullness on percussion; the latter toward the middle line of the body are tympanic. Especially significant is the course of the ascending and descending colon, which would necessarily be pushed forward or forward and inward by kidney tumors; hence the lumbar region is dull on percussion even anterior to the line of the axilla. The lumbar tympany is increased by all intraperitoneal tumors. Should the tumor be of such size that its pressure has collapsed the colon a gaseous enema will so distend the gut that its course can readily be detected.

From other kidney tumors cystic enlargement is to be distinguished by a more or less distinct sense of fluctuation, which being obtained absolutely diagnosticates either cystonephrosis or echinococcus cyst. Exploratory puncture will distinguish between these affections. v. Bergmann's symptom of an increased quantity of pus in the urine after firm pressure upon the cyst was observed but once.

As to treatment: relief can be afforded only by an operation. The fact that some secreting kidney tissue is still left, the exhausted condition of the sufferers, the high mortality of the operation all forbid a nephrectomy. Nephrotomy is the only allowable operation, and the method employed has a most important bearing on the subsequent course of the affection.

Technique of operation.—Position of patient semi-prone, the affected lumbar region being made to project as much as possible by a pillow placed beneath the sound side. The incision begins at a point midway between the twelfth rib and the brim of the pelvis at the outer border of the sacro-lumbalis muscle, and is carried outward parallel to the pelvic brim for four to five inches. The outer border of the latissimus dorsi and the three abdominal muscles are then cut through; the lumbar fascia and the outer border of

the quadratus lumborum being also somewhat incised. The thin transversalis fascia is now exposed, and being opened brings the operator directly to the capsule of the kidney. Bleeding is usually slight, but one or two vessels requiring attention. The posterior branch of the first or second lumbar nerve, if found crossing the wound, may be cut. The capsule of the kidney is freely exposed, loosened somewhat laterally, incised and its contents drained off; the operation requiring about two minutes from the first incision to the opening of the kidney. For the protection of the wound, the sac should be drained by a canula, incised and its walls sewed to the skin by threads passing through the lateral borders and both extremities of this incision. By traction on these threads two assistants cause the cyst incision to gape as widely as possible, the operator pressing the sac back with one hand upon the abdomen while he passes half of his other hand into the opening and carefully explores all parts of the sac. Septa are broken down with the finger, or blunt-pointed knife. Bleeding is always very slight. About the ureters an especially careful search must be made for stone. None being detected, the ureter, if its opening can be found, should be explored by a flexible sound with a metallic tip.

A continuous catgut suture secures the cyst opening to the skin. The cavity is thoroughly washed out, loosely filled with iodoform or thymol and bandaged with a large quantity of absorbent material placed over the wound. At first there is a very free discharge, necessitating frequent change of dressings; this soon diminishes, a part of the urine passing through the ureter. The fistula remains for some time, nor is it desirable that it should close quickly, for if this takes place before the catarrhal inflammation of the sac is cured this inflammation will continue indefinitely as a tedious, painful, depressing affection, most difficult to benefit. Therefore, as soon as cicatricial contraction begins the cyst should be washed out with astringents, nitrate of silver (0.2 to 0.5 : 100) being especially well borne. If the external wound closes rapidly a drainage tube, the thickness of the finger, should be inserted, and through it the washing continued until the urine passed from the bladder is almost clear. It must be borne in mind that there will be a slight precipitate of silver chloride if the nitrate has been used as a wash. The urine being clear the tube is gradually diminished in size, finally removed and the opening quickly closes. In this connection incision is proposed as a treatment for obstinate suppurative pyelitis.

AN EXPERIMENTAL CONTRIBUTION TO INTESTINAL SURGERY.

SENN, of Milwaukee, concludes, in the June number, 1887, of *The Annals of Surgery*, a series of papers on abdominal surgery, remarkable for their originality and practical suggestions. His experiments were made on cats and dogs, mainly the latter, and had in view especially the treatment of intestinal obstruction. Among the conclusions founded upon the results of his experiments are the following:

Traumatic stenosis from partial enterectomy, and longitudinal suturing of the wound, becomes a source of danger from obstruction, or perforation, in all cases where the lumen of the bowel is reduced more than one-half in size.

Longitudinal suturing of wounds on the mesenteric side of the intestine,

should never be practised, as such a procedure is invariably followed by gangrene and perforation by intercepting the vascular supply to the portion of bowel which corresponds to the mesenteric defect.

The immediate cause of gangrene in circular constriction of a loop of intestine, is due to obstruction of the venous circulation, and takes place first, in the majority of cases, at a point most remote from the cause of obstruction. On the convex surface of the bowel a defect an inch in width, from injury or operation, can be closed by transverse suturing without causing obstruction by flexion. In such cases the stenosis is subsequently corrected by a compensating bulging, or dilatation of the mesenteric side of the bowel.

Closing a wound of such dimensions on the mesenteric side of the bowel by transverse suturing, may give rise to intestinal obstruction by flexion, and to gangrene and perforation by seriously impairing the arterial supply to, and venous return from, the portion of the bowel corresponding with the mesenteric defect. Accumulation of intestinal contents above the seat of invagination, is one of the most important factors which prevents spontaneous reduction, and which determines gangrene of the intussusceptum and perforation of the bowel. Spontaneous disinvagination is not more frequent in ascending than descending invagination. The immediate or direct cause of gangrene of the intussusceptum is obstruction to the return of venous blood by constriction at the neck of intussusciens.

Ileo-cæcal invagination, when recent, can frequently be reduced by distention of the colon and rectum with water, but this method of reduction must be practised with the greatest caution and gentleness, as over-distention of the colon and rectum is productive of multiple longitudinal lacerations of the peritoneal coat, an accident which is followed by the gravest consequences. The competency of the ileo-cæcal valve can only be overcome by over-distention of the cæcum, and is effected by a mechanical separation of the margins of the valve, consequently it is imprudent to attempt the treatment of intestinal obstruction beyond the ileo-cæcal region by injections per rectum. In cases of extensive intestinal resection, the remaining portion of the intestinal tract undergoes compensatory hypertrophy, which microscopically is apparent by thickening of the intestinal coats and increased vascularization. Physiological exclusion of an extensive portion of the intestinal tract does not impair digestion, absorption and nutrition, as seriously as the removal of a similar portion by resection.

Fæcal accumulation does not take place in the excluded portion of the intestinal canal.

The excluded portion of the bowel undergoes progressive atrophy.

A modification of Jobert's invagination suture by lining the intussusceptum with a thin flexible rubber ring, and the substitution of catgut for silk sutures is preferable to circular enterorrhaphy by the Czerny-Lembert suture.

The line of suturing, or neck of intussusciens, should be covered by a flap or graft of omentum in all cases of circular resection, as this procedure furnishes an additional protection against perforation.

In circular enterorrhaphy the continuity of the peritoneal surface of the ends of the bowel to be united should be procured where the mesentery is detached by uniting the peritoneum with a fine catgut suture before the

bowel is sutured, as this modification of the ordinary method furnishes a better security against perforation on the mesenteric side.

In cases of complete division of an intestine, if it is deemed advisable not to resort to circular enterorrhaphy, one or both ends of the bowel should be closed by invagination to the depth of an inch, and three stitches of the continued suture embracing only the peritoneal and muscular coats.

The formation of a fistulous communication between the bowel above and below the seat of obstruction should take the place of resection and circular enterorrhaphy in all cases where it is impossible or impracticable to remove the cause of obstruction, or where after excision it would be impossible to restore the continuity of the intestinal canal by suturing, or where the pathological conditions which give rise to the obstruction do not constitute an intrinsic source of danger.

The formation of an artificial anus in the treatment of intestinal obstruction should only be practised in cases where the continuity of the intestinal canal cannot be restored by making an intestinal anastomosis.

Gastro-enterostomy, jejuno-ileostomy and ileo-ileostomy should always be made by lateral apposition with partially or completely decalcified perforated bone plates.

In making an intestinal anastomosis for obstruction in the cæcum, or colon, the communication above and below the seat of obstruction can be established by lateral apposition with perforated approximation plates, or by lateral implantation of the ileum into the colon or rectum.

An ileo-colostomy or ileo-rectostomy by approximation with decalcified, perforated bone plates, or by lateral implantation should be done in all cases of irreducible ileo-cæcal invagination, where the local signs do not indicate the existence of gangrene or impending perforation.

In all cases of impending gangrene or perforation, the invaginated portion should be excised, both ends of the bowel permanently closed and the continuity of the intestinal canal restored by making ileo-colostomy or ileo-rectostomy.

The restoration of the continuity of the intestinal canal by perforated approximation plates, or by lateral implantation, should be resorted to in all cases in which circular enterorrhaphy is impossible, on account of the difference in size of the lumina of the two ends of the bowel.

In cases of multiple gunshot wounds of the intestines involving the lateral or convex side of the bowel, the formation of intestinal anastomosis by perforated decalcified bone plates should be preferred to suturing, as this procedure is equally, if not more, safe, and requires less time.

Definitive healing of the intestinal wound is only initiated after the formation of a network of new vessels in the product of tissue proliferation from the approximated serous surfaces. Under favorable circumstances quite firm adhesions are formed within the peritoneal surfaces in six to twelve hours which effectually resist the pressure from within outward.

Scarification of the peritoneum at the seat of coaptation hastens the formation of adhesions, and the definitive healing of the intestinal wound.

Omental grafts, from one to two inches in width and sufficiently long to encircle the bowel completely, retain their vitality and become firmly ad-

herent in from twelve to eighteen hours, and are freely supplied with blood-vessels in from eighteen to forty-eight hours.

Omental transplantation, or omental grafting, should be done in every circular resection, or suturing of large wounds of the stomach or intestines, as this procedure favors healing of the visceral wound, and affords an additional protection against perforation.

The omental grafts used by Senn were from one and a half to two inches wide and long enough to encircle the bowel completely; the free ends were made to project somewhat beyond the mesenteric attachment, and fixed by two fine catgut sutures, each of which embraced the corresponding angles of the graft and the mesentery, and was placed in the direction of the mesenteric vessels.

In preparing these grafts, they were, as soon as cut from the omentum, put in (1 : 2000) corrosive sublimate solution, and kept at body heat till the operator was ready to place them, when they were carefully dried between gauze, or sponges wrung out of the same solution in which they had been lying. The peritoneum was then scarified with a fine needle, to the point of producing a very slight oozing, and the graft placed in position. Senn advises that, after suturing, a strip of omentum should be laid over large wounds of the stomach, or intestines, and kept in place by a few catgut sutures. These grafts should also be used in covering large stumps after ovariectomy, or hysterectomy if the pedicle be left in the abdomen.

THE TECHNIQUE OF COLOTOMY.

The obvious disadvantages of colotomy, as usually performed, are cited by MAYDL (*Centralblatt für Chirurg.*, 1888, No. 24) as the consideration which led him to devise the operation which he describes. He opens the peritoneal cavity by Littre's incision, and draws a loop of intestine forward till its mesenteric attachment lies in the abdominal wound. Through a slit in the mesentery close to the gut is inserted a hard rubber cylinder wrapped in iodoform gauze—a goose-quill will answer, if hard rubber be not obtainable. This prevents the retraction of the intestinal flexure. By means of a row of sutures placed on each side of the prolapsed gut, including the serous and muscular coats, the two limbs of the flexure, in so far as they lie in the abdominal wound, are stitched together beneath the hard rubber support. If the prolapsed gut is to be opened immediately, it is stitched to the parietal peritoneum of the abdominal incision and the latter protected by iodoform collodion. If the incision of the bowel is to be delayed, the latter is not stitched to the peritoneum but surrounded by iodoform gauze packed in beneath the rubber support, the operation being completed in four or six days.

If the artificial anus is to be permanent a transverse opening, including one-third of the periphery of the bowel, is made by the thermo-cautery, drainage tubes are inserted into the two presenting lumina, and the intestine is carefully washed out. If all goes well the gut is entirely cut through in two or three weeks, the rubber support serving well as a base upon which this division can be effected. A few sutures will serve to secure the cut end to the skin. If the direction of the muscular fibres has been regarded in making the

abdominal incision, the patient is provided with such a good sphincter that a large drainage tube is required to keep the opening patulous. Should only a temporary artificial anus be designed, a longitudinal opening must be made into the intestinal loop. When it is desired to close this opening the rubber support is taken away, the bowel retracted by the mesentery, and the opening spontaneously closed; or, if the cicatricial adhesions be too strong to allow of this, the bowel must be freed by the knife, sutured and returned to its proper cavity.

LAUENSTEIN (*loc. cit.*) accomplishes the same result as does Maydl, by suturing together first the skin and peritoneum of his abdominal incision, then drawing out a loop of intestine and closing his parietal wound by sutures passing through the mesocolon of the prolapsed gut, which is thus fastened in the abdominal incision; next the serosa of each limb of the prolapsed loop is stitched through its entire circumference to the parietal peritoneum.

THE OPERATIVE TREATMENT OF PROLAPSED RECTUM.

MIKULICZ (*Deutsch. Gesellch. für Chirurg.*, xvii. Kong.) advises circular resection as the best means of treating prolapse of the rectum, or prolapsed invagination of the colon. In one case two and a half feet of the prolapsed colon were resected, the patient making a good recovery. The patient is placed in the lithotomy position. Two strong threads are passed through the extremity of the prolapse and looped, serving for fixation. Irrigation through the operation with antiseptic solution. Transverse incision of the anterior portion of the intussusciens, going carefully through its thickness and checking all bleeding. When the serosa is cut through, exposing the serosa of the intussusceptum, the two serous membranes are stitched together by a circle of fine sutures, thus closing all communication with the peritoneal cavity. Just beyond the sutures the anterior part of the intussusceptum is also cut through. The cut ends of the gut are now sutured to each other, to the entire extent of the incision, by silk threads, including all the coats, the threads being left long that they may serve to steady the bowel for the completion of the operation. Finally, the remaining periphery of the two intestinal lumina is secured, the numerous mesenteric vessels tied and the union of the gut completed by the deep sutures. The line of suture is dusted with iodoform. The long ends of the thread cut away, and what remains of the prolapse is replaced within the anus. No drainage tube, no bandage. Opium for eight days.

SUPRAPUBIC CYSTOTOMY.

EIGENBRODT exhaustively considers the high operation on the bladder in *Deutsche Zeitschrift für Chirurg.*, Bd. 28, 1 and 2 Hft., founding his conclusions in great measure upon the thirty-eight cases operated on by Trendelenberg. Inflation of the rectum by the rubber bag is not advised, as the peritoneum is readily avoided without such a procedure; and that the latter is not devoid of danger is proven by rupture and gangrene of the rectum having followed its use; in children, the bladder has been thrust to one side, and in one case (St. Germain) the rectum presenting at the wound was,

together with the rubber bag, incised. When the suprapubic percussion dulness of the full bladder can be recognized, no more fluid need be injected. Over-distention is never necessary, nor previous treatment of cystitis, or contracted bladder. The incision should be transverse; if extensive, slightly convex downward, so that the extremities may correspond in direction with the inguinal canal. On reaching the deep fascia and abdominal muscles, it is most important to continue the operation as close to the pubic bone as possible, operating as though the object in view were the cutting away of the soft parts from the upper and posterior portion of the symphysis. Trendelenberg, by pressing with the fingers of his left hand against the sheath of the exposed muscles, so stretches their attachments to the bone that a touch of the knife frees them, and the danger of wounding the deeper lying soft parts is avoided. A few muscular fibres of the pyramidales are divided, but the two recti are not wounded.

The extent to which the fasciæ and tendons are separated from the pubis, depends upon the room required for subsequent manipulations. For the extraction of an ordinary stone, an incision one and a quarter to one and three-quarters inches in extent is sufficient. For tumor operations, or the removal of very large stones, two and a half to three and a quarter inches will be required, and both recti will be completely separated from the pelvis. The fasciæ and tendons having been cut from the pubes, the prævesical cellular tissue is exposed, usually containing much fat. The knife must now be laid aside, the second and third fingers of the left hand thrust in the prævesical space, dorsal aspect to the bone; the index and middle finger pressed down well behind the symphysis till the region of the neck of the bladder is reached, then bending the fingers, all the soft tissues lying anterior to the bladder, especially the peritoneal fold, are drawn carefully upward; the bladder is now exposed, and can be safely incised, the fingers of the left hand readily keeping the peritoneum out of the way. Tenacula are by this procedure unnecessary. If a very large incision into the bladder is required, the peritoneum can readily be separated from that viscus for a considerable extent with the fingers. In the manner described, even a bladder which has not been injected is, in a few minutes, exposed and safely opened. Elevation of the pelvis greatly simplifies the operation, and in this position the patient should always be placed.

After the completion of the operation, the bladder is thoroughly washed out with a weak sublimate solution (1:3000 to 5000), a T-formed drainage tube is placed in the bladder, carried over the symphysis, through the central portion of the external wound; the extremities of the superficial incision are closed by a few sutures passed through the skin, and iodoform gauze is loosely packed in the open wound about the drainage tube. If the superficial incision has been extensive, drainage should be provided for at both extremities of the wound.

If a very large bladder incision has been made, a few sutures may be inserted to lessen the size of the wound, but complete closure by suture is not yet justified by statistics. Suturing of the bladder with loose antiseptic packing of the parietal wound, as advised by Kraske, Ultzmann and Mikulicz, is yet *sub judice*.

Trendelenberg removes his drainage tube in from one to two weeks; in uncomplicated cases three to four weeks sufficed for a complete cure.

In cases of marked cystitis or pyelitis with alkaline urine a long-standing fistula results, lasting, at times, if the condition of the urine be unchanged, for life.

In Trendelenberg's cases there was no instance of urine infiltration or cellulitis. In one case only was there burrowing of pus—the patient, a feeble old man, dying of exhaustion thirteen weeks after the operation.

Of Trendelenberg's 38 patients 7 died in the course of treatment. No death can be ascribed directly to the operation.

3 perished of intercurrent disease more than one month after the operation, 2 of carcinoma (four and five days after the operation respectively), 1 of delirium tremens (twelve months after operation), and 1 of burrowing of pus and profuse suppuration (two months after operation).

Against König's dictum, "The perineal incision must remain the natural operation for the lighter cases, the more dangerous high operation being reserved for the severe cases," the author contends that before operation it is often impossible to tell how difficult the case may be, and shows by reference to Trendelenberg's cases several instances in which history and examination would have proven the case amenable to the median operation. The conditions on opening, however, proved that none but the high incision could have carried the patients safely through. All of Trendelenberg's uncomplicated stone cases made a safe and rapid recovery; and Assendeft, who has done the high operation 102 times, lost but 2 patients, 1 from causes not connected with the operation. All of his patients were young.

The high operation takes its place as beyond all other procedures in the treatment of diseases of the bladder walls. All of Trendelenberg's tumor cases were carcinomatous. If such tumors were promptly recognized and treated, a relatively good prognosis could undoubtedly be given. An early symptom is slight but frequent admixture of blood with the urine, often not observed because not accompanied by marked pain. Such bleeding, having no obvious cause, should always suggest a bladder tumor, and lead the physician to make a most thorough and patient search for confirmation of the diagnosis. If this necessitates an operation, the high incision should be made at once, when, on confirmation, the operator can proceed directly to extirpation. This should be accomplished with scissors and sharp spoon, or by excision of a part of the bladder wall; bleeding being stopped by cautery.

Tubercle of the bladder gives rise to symptoms much like those of tumor, and can often be diagnosed only by visual inspection after opening the bladder. The high operation alone enables the surgeon to do this satisfactorily and undertake the radical extirpation of the diseased areas.

Finally, the high operation is commended as most suitable for posterior catheterization, when, through traumatic stricture with great periurethral inflammation and cicatrization, or false passage with infiltration, or rupture of the urethra, the ordinary means of procedure (ordinary catheterization, the median operation, etc.) are no longer available.

OTOLOGY.

UNDER THE CHARGE OF

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ABSCESS OF THE CEREBELLUM FROM EAR-DISEASE.

DR. J. OKNE GREEN (*Boston Medical and Surgical Journal*, May 31, 1888) reports a case of the above named disease occurring in a man, thirty-six years old, who had been kicked in the temporal region by a horse, fifteen years previous to his entrance into the Boston City Hospital, March, 1888. An otorrhœa had existed in the right ear since the injury on the temple. Within the five months previous to admission he complained of headache, especially in the right temporal region; latterly he had vomited more or less without apparent cause, and chiefly at night. Intellect clear, appetite good, bowels not constipated. Examination revealed right facial paresis and otorrhœa. In four days the facial paresis disappeared without treatment.

Dr. Green found the meatus filled with polypoid growths, which were removed under ether. Carious bone was detected in the posterior and upper part of the tympanic cavity. The operation gave great relief, and the headache and nausea ceased entirely for two or three days. The polypoid stump was treated with spirits of wine, and the ear kept clean by antiseptic syringing.

The tuning-fork on the vertex was heard entirely in the right ear (the affected one). The headache and occasional vomiting soon returned, and up to time of death were intermittent, continuing for twenty-four or forty-eight hours, then ceasing, to return again after one or two days. Slight momentary delirium once or twice before death. Condition mostly somnolent. Sitting up immediately caused great vertigo, and if this position was maintained, vomiting ensued. Pain always referred to right side; right pupil somewhat sluggish, and during the last week of life there was marked constipation. The pain was not severe enough to require opiates, and no internal medication was given excepting calomel to overcome constipation. Twenty-four hours before death there was mild delirium, with some screaming, as if from pain, then unconsciousness, and within a half hour thereafter a quiet death. The most continuous pain and most frequent vomiting occurred during those days when the pulse was lowest. The temperature was normal throughout; the pulse varied from 85 to 52.

The *post-mortem* examination revealed an abscess of the cerebellum opposite the foramen for the seventh nerve, on the vertical portion of the temporal bone. The abscess, the size of an English walnut, contained greenish, offensive pus. Behind the tympanic cavity in the substance of the petrous bone, opposite to the abscess, was a carious region. The trabeculæ of the mastoid cells had disappeared, and the cavity was filled with a soft, grayish, cheesy material, with a foul odor.

The diagnosis was: Acute, circumscribed internal and external pachy-

meningitis; acute, circumscribed lepto-meningitis; abscess of the cerebellum; flattening of the convolutions of the brain; dryness of the pia; chronic middle ear catarrh; necrosis of the mastoid cells and of the petrous portion of the temporal bone.

Abscess of the cerebellum was not diagnosticated during life, as pain was referred chiefly to the temporal and parietal regions. Furthermore, disease of the posterior surface of the petrous bone, being less common than caries of the upper surface, the former condition was not suspected. The easily excited and great vertigo, however, pointed toward cerebellar disease rather than to disease of the cerebrum. The case shows how slight the symptoms may be in a case of abscess of the brain.

Dr. Green says: "The possibility of evacuating, draining and healing an abscess of the cerebellum has not, I believe, yet been demonstrated, although a number of successful operations on the cerebrum have been reported. The cerebellar operation offers unusual difficulties in that it is either necessary to enter the skull below the superior curved line of the occiput in order to avoid the large sinuses, or else to pass through the tentorium from above, with the risk of imperfect drainage."

LEUCOCYTHÆMIA, PRECEDED BY DEAFNESS AND FACIAL PARALYSIS.

A man, fifty-eight years old, had been in good health for fifteen years, when he suddenly became deaf, especially in the left ear, and facial paralysis appeared on the left side. The appearance of the ear was normal. Electric treatment was painful and benefited but little, though it was conducted for several weeks. Most relief was obtained from douching the face with warm water and from poultices. The paralysis disappeared at last. Sleeplessness and debility continued; also stiffness and sensitiveness of the previously paralyzed facial muscles. Some acute symptoms set in, viz., painful cramp in the calf of the leg, the lower extremities "going to sleep," sensation of tension and restlessness of the legs, etc., with increase of general weakness. About this time there was discovered in the region of the umbilicus, beneath the skin, five or six insensible tumors, the size of hazel nuts; similar tumors had formed within a few months, in the lumbar region, but had not been noticed by the patient. The liver and spleen were enlarged, but now increased in size. With increasing weakness, severe pains at each movement and further development of tumors, the breath became fetid, and the lymphatic glands in the neck increased in size, until they formed a large, composite mass. One of the tumors removed from the abdomen was shown to be a lymphadenoma. Examination of the blood exhibited forty-two white blood cells in one field of the microscope. Death occurred six months after the facial paralysis first appeared. There was no post-mortem examination. (GELLÉ, *Revue Mensuelle de Laryngologie*, No. 12, 1887.)

DERMATOLOGY.

UNDER THE CHARGE OF

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AND

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ON A PECULIAR ERUPTION OF COMEDONES IN CHILDREN.

COLCOTT Fox describes (*Lancet*, April 7, 1888) the features of a peculiar condition occurring in children, apparently similar to the comedones of adolescence. Instead of appearing scattered and with no relationship to season as in the ordinary comedones after puberty, the disease showed a marked tendency to occur in aggregations, on certain parts, and at certain seasons. The lesion itself is undistinguishable from the comedo of the adult. They usually make their first appearance on the forehead close to the scalp, over the region of the eyebrows, and then tend to join and form a continuous band. Scarcely a gland duct in the involved area escapes. There is also a tendency for the same formation to encroach upon the scalp, and also down the sides of the temples, in a strip, to the angle of the jaw. Their appearance may be gradual or sudden, at times appearing and disappearing in the most wonderful manner.

The disease is noted mainly in the spring and early summer; it tends to disappear in the winter season, in some instances recurring the following spring. It seems, with some exceptions, limited to children between the ages of five and nine, and is, moreover, commonly seen in children's hospitals. Inflammation about the plugs, although usually slight and secondary, may occur, and give rise to the ordinary lesion of acne. Several children in one family are often concurrently affected. The disease does not attack the parents and other adults living with the affected children. Although a number of the patients attended school while affected, no evidence of communication to other scholars was traceable. In the thirty-eight cases in which the sex was recorded, there were twenty-eight males. The eruption does not appear to be dependent upon any condition of the general health. It is, moreover, seen in about the same frequency in the light and dark, and in the delicate and robust. The plugs are apparently formed from the epithelial lining of the follicles, and not from sebum as in the comedones of later life.

Investigation as to a parasitic cause developed nothing positive. In respect to treatment the results are satisfactory. The same measures as usually employed in cases of comedones in adults are to be advised.

RESORCIN IN CHRONIC ECZEMA.

A favorable report is made (*Therapeutic Gazette*, June, 1888) by M. SCHMITZ of the treatment of two obstinate cases of chronic eczema by means of appli-

cations of resorcin. The remedy was employed as a solution in glycerin—a half ounce of the former to four ounces of the latter. The patients were young children, the disease chronic, and more or less general. The affected parts were painted twice daily with the above solution, improvement thereafter being steady and continuous. .

THE OINTMENT OF THE NITRATE OF MERCURY AS AN ABORTIFACIENT OF BOILS AND FELONS.

KENNER states (*Medical and Surgical Reporter*, April 14, 1888) that boils and felons may be frequently aborted by applications of citrine ointment, if treatment is instituted before positive suppuration occurs. The ointment is applied in a thick layer, as a plaster, and allowed to remain on twenty-four hours, at the end of which time further treatment is, as a rule, unnecessary. The application is not painful, for the first several hours giving rise to a peculiar drawing sensation, followed by complete cessation of pain and tenderness.

ON LUPUS.

From an exhaustive paper (*British Medical Journal*, January 7, 14 and 21, 1888) on lupus by HUTCHINSON, the following observations, for the most part in the author's language, may be said to express the substance of the views presented: Many facts as to the cause of lupus—such, for instance, as its frequently beginning after slight injuries to the part—would suggest the belief that a stage of congestion and cell-effusion, undistinguished from common inflammation, usually precedes for a short period the characteristic growth.

There are, further, no facts whatever which would support a belief that lupus ever takes its origin from contagion.

Among the qualifying or descriptive adjectives which have been used for lupus, that of "serpiginous" can well be spared, as it is the very essence of the disease to be serpiginous, and if any form of new growth or inflammatory action were shown to be not so, it would certainly *de facto* lose all claim to rank with the lupus family.

Its manner of spreading, moreover, proves that lupus action is attended by the production in the part of elements which are infective to those with which they are in contact—infection by continuity. Not infrequently, also, new foci of disease appear which are not continuous with the original patch—infection by contiguity—the infective material spreading probably either in the perivascular spaces or along the lymphatic channels.

An absence of tendency to infect the lymphatic glands must be noted in all forms of lupus, and with it also an absence of tendency to travel deeply or to involve parts other than the skin. It is in the main a disease of exposed parts, the face and the extremities being its most frequent sites; and the more protected the part, as regards warmth, the less is it likely to be the seat of the disease.

As to the influence of age, it may be stated that the younger the patient the greater is the probability that the disease will inflame and ulcerate, and the greater by very far the risk that its infective material will become diffused, and its manifestations multiple and distant.

Although statistics from the author's personal observation showed but a small percentage of the presence of other symptoms of scrofula, the opinion is nevertheless expressed that lupus is in very many instances a scrofulous disease; but that in most instances the tendency to disease of this type having begun in the skin restricts itself to it, and shows little or no tendency to attack internal organs. There is also another peculiarity of health which is of much importance in predisposing to certain forms of lupus—the proclivity to chilblains. This concerns the erythematous form more than common lupus; but it is not without influence as regards the latter.

In discussing the histology of the lupus family the conclusion is given that neither lupus erythematosus nor lupus vulgaris is a disease of any special structure in the skin, whether gland or vessel, but beginning rather in the areolar space they implicate secondarily one or other of the cutaneous viscera or vessels, it may be the sudoriparous or the sebaceous glands, it may be the hair follicles, it may be the perivascular spaces, or, lastly, it may chance to be the lymphatics.

Although there are superficial differences between lupus vulgaris and lupus erythematosus, the affections are closely allied; and they are in a general way induced by a similar kind of causative influences. In the latter symmetry and absence of a tendency to ulcerate are the rule, and constitute probably the most important clinical differences.

Rare forms of the disease are occasionally met with. For instance, the disease in rare instances seems to partake of the nature of both eczema and lupus—eczema-lupus. The very prolonged duration of the patches, their obstinacy, their slow extension by infection at the borders, and, above all, the fact that when cured they leave scars, sufficiently prove them to be lupus; now and then the patient has patches of eczema on other parts which do not assume lupus characters. Another rare form is acne-lupus, the same as described by Fox under the name lupus follicularis disseminatus. The disease is a combination of acne and lupus, or, more correctly, perhaps, lupus attacking acne spots. Psoriasis lupus, nævus-lupus and other rare cases illustrating combinations of one or more diseases with lupus are also referred to. Recent observations as to the specific bacillus as the cause are mentioned, but the author on this point expresses neither concurrence nor dissent.

OBSTETRICS.

UNDER THE CHARGE OF

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CONCEPTION WITH IMPERFORATE HYMEN.

Imperforate hymen, pregnancy and dilated urethra are illustrated by a case reported by ZINNSTAG (*Centralblatt für Gynäkologie*, No. 14, 1888). The patient had menstruated without difficulty, and conception followed repeated

coitus. At labor examination revealed an urethra dilated by coitus; the posterior wall of the bladder distended by the head; imperforate hymen. The latter was incised and labor proceeded to a successful termination. The lying-in period was normal.

The patient could give no history of bladder trouble, or menstrual derangement; an imperceptible opening must have existed in the hymen, through which menstrual blood passed (as none was found on incising) and spermatozoa entered.

DOUBLE UTERUS AND VAGINA.

TAUFFER reports, in the *Centralblatt für Gynäkologie*, No. 15, 1888, a case of double uterus and vagina in a multipara; the condition had not been recognized in previous labors, although the retention of decidua in one uterus had caused fever and pain after the other uterus had expelled a child.

From his study of the case Tauffer concludes that both uteri had been pregnant and had borne, and that simultaneous pregnancy, or superfœtation, is possible in both. If only one uterus is pregnant the other might delay labor as a small tumor would do. Decidua formed in the non-pregnant uterus during single pregnancy, and caused hemorrhage and endometritis, whose location was not recognized.

FATAL PTOMAINÉ INTOXICATION DURING PREGNANCY.

GUSTAVE BRAUN (*Wiener medicinische Presse*, No. 19, 1888) reports the case of a multipara, seven months pregnant, who died from pulmonary œdema, after delivery. The urine contained casts and albumen.

PAULTAUF, on post-mortem examination, found fatty liver, fluid blood, nephritis and cerebral œdema. Microscopically, multiple rupture of capillaries with extravasation of blood was found in the liver.

PAULTAUF and BAMBERGER, from these conditions and the hyperæmic condition of the intestines, diagnosed ptomainé intoxication; the patient had eaten partly decomposed flesh a few days previous.

SCARLATINA DURING PREGNANCY AND PARTURITION.

MEYER (*Zeitschrift für Geburtshülfe*, Band 14, Heft 2) analyzes twenty-one cases. He found it impossible to detect the medium of contagion. The period of incubation was from three to five days.

In six out of twenty-one cases the disease ran a mild course without complications affecting the genitals. In eight pronounced inflammations of the genitals occurred, with two deaths from sepsis.

The diagnosis is usually not difficult; cases complicated by sepsis furnish difficulties in recognizing the disease. The prognosis Meyer thinks less unfavorable than commonly supposed. Scarlatina may result in septic infection, usually through wounds of varying severity in the genitals, when the prognosis becomes doubtful. Puerperal scarlatina resembles surgical scarlatina in the formation of diphtheritic ulcers in lesions existing before infection.

Treatment is antiseptis, as applied to parturients. Vaginal examinations should be as infrequent as possible.

Of the children, two were stillborn; four disappeared from observation. Twenty children were nursed by women having scarlatina: one of these died of erysipelas; one of scarlatina, post-mortem examination revealed catarrhal pneumonia and enteritis. The remaining children did not contract the disease.

Points of especial interest in scarlatina occurring in parturients are: (1) short incubation period (three to five days); (2) prompt appearance of eruption which becomes diffuse, and is dark red in color; (3) angina is rarely well marked.

THE ALBUMINURIA OF PREGNANCY.

BARNES (*Lancet*, May 12, 1888), in view of recent discussions "on transient albuminuria," cites the kidney during pregnancy as the best example of the condition of nervous and vascular tension which admits of albuminuria, but is not nephritis. Analogous to this condition is the kidney in scarlatina.

Barnes regards neither condition as pathological.

THE ELECTRICAL TREATMENT OF ABORTION WITH RETENTION OF SECUNDINES.

FRY (*American Journal of Obstetrics*, June, 1888) reports a case in which, one year after operation, fragments of membrane were expelled and general hemorrhage checked by galvanism, the positive pole within the uterus, and a maximum current of ninety milliamperes being employed for from six to ten minutes.

He believes that tissue retained after abortion is of feeble vitality. The positive pole of the galvanic current produces coagulation of tissue (as an acid does), obliterates bloodvessels, destroying the vitality of retained tissues, and promotes exfoliation and expulsion.

A CASE OF MISSED LABOR.

GÓTH reports (*Archiv für Gynäkologie*, Band 32, Heft 2) the case of a primipara in whom fetal life was destroyed by a fall at eight months pregnancy. Labor did not come on, but necrosed fetal tissue and pus were discharged, and the patient contracted septicæmia. Efforts to remove the fetal remnants failed; twenty months after labor should have occurred a vagino-rectal fistula formed, with discharge of necrosed tissue. Two years after conception, under deep narcosis, the cervix was split, impacted fetal bones were removed, and the uterus was emptied and disinfected; recovery followed.

From the literature consulted, Góth adduces multiple intra-mural fibromata and disease of the endometrium as causes for missed labor.

VERSION BEFORE LABOR FOR FETAL MALPOSITIONS.

AYERS (*New York Medical Record*, No. 21, 1888) reports three cases of breech presentation, one face presentation and two cross positions, in which

he produced a normal occipito-anterior position by combined external and internal manipulation before labor.

In one case the membranes were ruptured unintentionally, but the success of the manipulation was not interfered with. Lateral compresses were used once to retain the fœtus in proper position; in two cases the head was held in place until labor began.

THE MECHANISM OF ROTATION IN HEAD PRESENTATIONS.

OLSHAUSEN (*Münchener med. Wochenschrift*, No. 25, 1888) considers the rotations which the head makes in head presentation to be caused by rotations of the trunk.

The trunk is caused to rotate by the flattening of the uterus, antero-posteriorly, after the escape of the amniotic fluid, and the form of the uterus as the birth progresses.

THE DELIVERY OF THE AFTER-COMING HEAD.

WINCKEL, at the recent meeting of the German Society for Gynecology (*Münchener medicinische Wochenschrift*, No. 22, 1888), referred to twenty-one methods of extracting the after-coming head. He considered that procedure best which combined pressure externally with the maintenance of the head in that position best suited for birth.

He accomplishes this as follows: The trunk and arms, when born, are raised. Two fingers of the right or left hand toward which the face looks are placed in the child's mouth at the base of the tongue and flexion is secured. The trunk is then placed upon the forearm of this hand and with the other hand pressure is made through the uterus upon the head.

As Wigand and Martin had previously described this method, he styled it by their names. He had found delivery by this method readily effected with a pelvic antero-posterior diameter of two and one-half inches. Martin had employed it successfully in thirty-three cases, and he used it often in his clinic.

SCHULTZE, to avoid injuring the child's mouth, placed four fingers on the forehead and made traction.

MARTIN believed that the method described by Winckel was superior to the use of the forceps, or to operations for lessening the size of the head.

BREISKY thought that pressure on the head should only be made when the head is in the upper, and not in the thinned inferior uterine segment, to avoid rupture of the uterus. The entrance of the fingers into the mouth was a lesser evil, as it often introduced bacteria: he usually placed his fingers on the chin, or upper jaw.

WINCKEL, in closing the discussion, limited the force exerted on the child's mouth to the moderate traction necessary to secure flexion. He had employed this method when the uterine segment was greatly stretched without accident.

THE SEPARATION OF THE PLACENTA.

FEHLING, at the recent meeting of the German Society for Gynecology (*Münchener medicinische Wochenschrift*, No. 22, 1888), reported that he had ex-

amined the mode of separation of the placenta in 100 cases, in which no traction was made upon the cord.

In the great majority the placenta presented by its edge, as Duncan has described. In five cases it formed a cup-like body, as Schultze has reported. In these cases the membranes were separated on the maternal surface: in one-third of the other cases the separation occurred on the foetal surface. When the placenta presented by its edge the cord was long; when a cup-like presentation of the placenta occurred the cord was short.

Fehling believes that the last uterine contractions which expel the child separate the placenta: the effusion of blood is accidental, and slight in normal cases: such effusion is stopped by thrombosis. The uterine cavity becomes oblong after the placenta is expelled.

He discouraged traction on the cord and interference with the natural mechanism.

SCHATZ ascribed the placental presentation by its edge to uterine peristalsis.

WINCKEL had found two hours the average time required for *spontaneous* expulsion of the placenta: the placenta was cup-shaped; the place of insertion of the cord was anterior: the average blood loss was about seven ounces. The child makes traction on the cord, causing the cup-shaped presentation.

AHLFELD found the loss of blood, when the placenta was expelled spontaneously, twelve and one-half ounces, which ceased in five hours; there was no after-bleeding.

DOHRN had found it necessary to deliver the placenta (Credé's method) in only ten per cent. of his clinical cases: spontaneous expulsion was the rule.

ABDOMINAL HYDATIDS OBSTRUCTING LABOR.

PINARD (*Annales de Gynécologie*, April, 1888) reports the case of a primipara at term, with premature rupture of the membranes and labor delayed for two days by a tumor filling the pelvis. The child lived, in head presentation.

With Tarnier, Pinard prepared for Cæsarean section, when the tumor was displaced, punctured, and found to be a multiple hydatid of the abdominal cavity. Natural labor followed, the child surviving. The mother died of septicæmia four days afterward. In the fluid of the cysts was found a diplococcus which may have been pathogenic.

PREGNANCY AND PARTURITION COMPLICATED BY CARCINOMA OF THE CERVIX.

HEINRICIUS (*Nouvelles Archives d'Obstétrique*, No. 4, 1888) reports the case of a multipara suffering from carcinoma of the anterior lip of the cervix, who bore a healthy child after a normal labor. The puerperium was normal; the cancer seemed to diminish slightly in size.

On her recovery from parturition the patient was operated upon, the tumor removed, and found to be cancer. Death occurred a year after the operation.

Spontaneous birth occurs in the majority of cases of carcinoma uteri, com-

plicating pregnancy, when but one lip of the cervix is affected. In such cases the interests of the foetus should be paramount, and pregnancy should not be interrupted.

THE TREATMENT OF FIBRO-MYOMATA COMPLICATING PREGNANCY AND LABOR.

PHILLIPS (*British Medical Journal*, June 23, 1888) remarks that fibro-myomata may induce labor, cause peritonitis, obstruct the passage of the foetus through the pelvis and cause foetal malpositions. The placenta is often adherent to the tumor; uterine contraction and involution are interfered with, and the disintegration of the tumor may cause sepsis.

Fibro-myomata in the body of the uterus disturb pregnancy. These tumors, when in the lower uterine segment, may ascend; when in the cervix fibro-myomata impede delivery.

Phillips has found 300 cases collected by Lefour; he adds 59 cases in which the tumor complicated pregnancy or labor, in which laparotomy was not performed, and 47 cases in which it was.

Before the foetus was viable, abortion was produced in 4 cases, which recovered. Myomotomy (abdominal section and removal of fibroids by ligature) was performed 5 times, with 2 recoveries; this operation is indicated when the tumor is accessible, and causes great pain by distention. Müller's ablation (abdominal section, with removal of tumor and uterus) was performed 19 times, with 12 recoveries. The stump was treated extra-peritoneally in 13 cases, with 9 recoveries; intra-peritoneally in 6 cases, with 3 recoveries.

During foetal viability labor was induced 9 times, with 3 maternal and 7 foetal deaths. Playfair reports 3 cases in which the tumor was successfully pushed up during labor; others have not been so successful. Mundé removed successfully a large cervical fibro-myoma *per vaginam* during labor.

Phillips has collected 33 cases of Cæsarean section for this complication, up to 1880, with a maternal mortality of 84.8 per cent. Since 1880 there have been 13 Cæsarean operations and 13 Porro operations *with equal maternal mortality*, 69.22 per cent.; the foetal mortality was slightly less by the Cæsarean operation. The mortality rate by Müller's ablation was 36.8 per cent.

The statistics of Lefour's cases show that the forceps, embryotomy, version and spontaneous birth resulted in maternal mortalities from 25 per cent. to 55 per cent.; foetal mortality averaged 77 per cent.

THREE CASES OF DYSTOCIA CAUSED BY FIBROID TUMORS.

PORAK (*Bulletin de la Société Obstétricale*, No. 4, 1888) reports a case of pregnancy complicated by a solid tumor of the left ovary, obstructing delivery, which became dislocated during labor. The puerperal period was marked by only slight disturbances of pulse and temperature, and the patient recovered, with the tumor movable and situated at the brim of the pelvis.

A second case was one of multiple intra-mural and subserous fibroids, in which abortion occurred at five months. The placenta, Porak thinks, was adherent to the largest intra-mural fibroid; it was retained, and was finally discharged in fragments with necrosed tumor.

Septicæmia occurred, which was treated by intra-uterine injections given through a double rubber catheter constructed for the patient; the pelvis was so occluded that neither the hand nor an inflexible sound could be introduced.

After two large pieces of necrosed tumor had been removed the patient recovered, the uterine mucosa finally sloughing. At recovery the uterus was slightly smaller than normally; the tumor had disappeared.

The third case was one of twin pregnancy with multiple fibroids, in which abortion was performed at three months. A portion of one placenta was retained. Injections of bichloride of mercury, 1 to 2000, followed by injections of saturated solution of boric acid were employed. Mercurial poisoning supervened. The injections were changed to 1 to 4000, but without avail, the patient dying of mercurial intoxication.

CÆSAREAN SECTION FOR FIBROIDS COMPLICATING PREGNANCY.

BAILEY (*Lancet*, May 12, 1888) performed Cæsarean section for fibroids in the posterior *cul-de-sac*, which reduced the antero-posterior diameter to one and a half inches. The operation was not especially difficult; several fibroids were divided by the uterine incision. The cervix was patent, and was tamponed with iodoform cotton.

The mother died of sepsis; the child survived. Post-mortem examination showed that the fibroids severed in the uterine walls had necrosed; the uterine incision had not united, and retroflexion had occurred, which prevented drainage of the uterus.

EXTRA-UTERINE PREGNANCY; LAPAROTOMY; RECOVERY.

HAWLEY (*New York Medical Journal*, June 16, 1888) reports the case of a pregnant multipara suffering from attacks of pain and hemorrhage. The development of a cystic tumor as large as a lemon, in the *cul-de-sac*, pushing the uterus forward and to the left, determined a diagnosis of extra-uterine pregnancy.

Laparotomy was speedily done, and successfully. The cyst was removed intact, composed of the outer extremity of the left tube, containing a fœtus of about six weeks growth.

He adds (in a foot-note) a case of unruptured tubal gestation at three months which he had recently removed, and with probable recovery of the patient. He urges enthusiastically laparotomy for early tubal pregnancy.

THE TREATMENT OF EXTRA-UTERINE PREGNANCY.

SCHWARZ (*Deutsche Gesellschaft für Gynäkologie*, II. Congress. *Münchener medicinische Wochenschrift*, No. 23, 1888) believed laparotomy and removal of the sac the only rational treatment.

Extra-uterine pregnancy is made frequent by gonorrhœal and other pelvic inflammations. Patients commonly perish from hemorrhage and shock; he had seen the loss of twelve ounces of blood cause death. When the tumor is sub-diaphragmatic, treatment should be expectant: when in the abdomen, operative. One assistant, a nurse and antiseptic instruments are required. If

the source of bleeding is not found, the ovarian or uterine artery should be tied.

WINCKEL had treated seven cases by injections of one-half grain of morphia into the sac: five recovered; one had recovered under the treatment, had the same condition again; the fœtus died, the patient died of gastric hemorrhage. The second died of suppuration of the sac and sepsis, after puncture through the vagina.

VEIT had operated successfully on seven cases. He also operated on three cases moribund after rupture of the sac; one recovered.

MARTIN favored operation in uncomplicated cases. He had operated once, unsuccessfully, after rupture.

AN EXTRAORDINARY DEMONSTRATION OF SCHULTZE'S METHOD OF RESUSCITATION OF THE NEWBORN.

WIERCINSKY reports (*Centralblatt für Gynäkologie*, No. 23, 1888) a case of spinal apoplexy in a multipara, on whom, moribund, Cæsarean section was performed by KRASSOWSKY (St. Petersburg).

The membranes had not been ruptured. The child showed no sign of life when removed from the uterus. Schultze's method of resuscitation (swinging the child by the chest and shoulders) was employed without success until percussion showed air in the lungs.

Post-mortem examination revealed the following interesting points: Air is introduced by his procedure into the lungs, and, possibly, into the stomach and small intestine; as the membranes had not been ruptured no air could have entered the child's lungs except by the procedure employed. The child had not endeavored to breathe; showing that the fœtus perishes from asphyxia before the mother. The general post-mortem appearance was that of diffuse œdema, with serous transudate, and not the usual hyperœmia of asphyxia.

A CASE OF WOUND OF THE FOREHEAD OF A NEWBORN CHILD, OCCURRING DURING VAGINAL EXAMINATION.

DOHRN (*Zeitschrift für Geburtshilfe*, Band 14, Heft 2) reports the case of a child born of a normally shaped mother after a normal labor, which presented a granulating surface of the superficial tissues over the left eye. Prompt healing ensued, without evidence of constitutional disease.

By exclusion Dohrn concluded that a long finger-nail, on a physician who examined the patient, caused the wound. The membranes had not, however, been ruptured. Dohrn had seen another similar case.

THE DANGER OF METAL IN NURSING-BOTTLES.

REIMANN was led to investigate a nursing-bottle with metallic fastenings, said to be "Britannia metal." Analysis showed twenty-five per cent. of lead in the metallic parts, and reference to the records of the Berlin Bureau of Hygiene revealed cases where liquids in contact with vessels containing less proportion of lead had caused lead poisoning. Glass and rubber only should be used.—*Berliner klinische Wochenschrift*, No. 19, 1888.

GYNECOLOGY.

UNDER THE CHARGE OF
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STERILITY AFTER THE BIRTH OF ONE CHILD (EIN-KIND STERILITÄT).

KLEINWÄCHTER (*Zeitschrift für Heilkunde*, Bd. viii.) noted among 1081 women 90 who had remained sterile after bearing one child. On investigating the cause, he found that in nearly one-half of the cases it was due to inflammation of the uterus and its adnexa, or of the peri-uterine tissues, following labor; in one-fifth it was attributable to displacements or neoplasms. On the other hand, simple uterine displacements and catarrh, if uncomplicated, should not always be regarded as the true cause of sterility, since in a considerable proportion of the cases the husband is impotent. The latter factor may be removed by the marriage of the woman with a second, more capable man. For this reason the writer concludes that the prognosis in these cases is never absolutely unfavorable.

PSYCHOSES FOLLOWING GYNECOLOGICAL OPERATIONS.

WERTH read a paper on this subject before the German Gynecological Society at Halle (*Münchener med. Wochenschrift*, June 5, 1888), in which he stated that among three hundred operations on the female genital tract, he had in six instances noted psychical disturbances (melancholia) due to the operation. In two cases the trouble developed within a week after the operation, and in the others after a few weeks. The mental disturbances persisted from two to over six weeks. Three were cured and three were not improved, one of the latter committing suicide. In two cases the operation was total extirpation of the uterus, in two, castration, and in two, irrigation of the bladder (for the first time) for vesical catarrh. Three women had reached the menopause; one was violently excited before the operation. The phenomena could not be referred to iodoform poisoning, as the drug was used sparingly or not at all.

Sänger, in discussing this paper, said that he recalled several cases in which cerebral symptoms developed after gynecological operations. In two instances these were clearly referable to iodoform, though little was used on the dressings. In spite of the facts stated, he believed that patients with pelvic troubles having a tendency to psychoses should be treated the same as other women.

MARTIN agreed with Sänger that the operation was only an exciting cause of the psychical disturbance. We should be cautious about operating upon a patient with such a tendency, but in the case of women who are mentally sound there is no danger of such trouble being caused by the operation.

AHLFELD cited a case in which marked psychoses were occasioned by the use of a speculum.

A NEW METHOD OF CLOSING CERVICO-VESICO-VAGINAL FISTULÆ.

SÄNGER (*Centralblatt für Gynäkologie*, June 9, 1888) reports the case of a multipara, in whom a large vesico-vaginal fistula was found in the upper third of the vagina, eight weeks after the birth of her fourth child (by difficult version). It was closed at the first operation with eleven silkworm-gut sutures, but urine still escaped into the vagina, so that it was supposed that the operation was not entirely successful. On injecting milk into the bladder, it was seen to escape from the os externum. The cervix was lacerated on both sides, but it was necessary to dilate it with laminaria tents in order to find the vesico-uterine fistula, which was situated about one-fifth of an inch above the angle of the tear on the left side. In order to close it, the patient was placed in the Sims's position, the cervix was split on both sides, and on the right side the cervical was united to the vaginal mucous membrane, while on the left the edges of the fistula were denuded and united by four silk sutures; healing occurred by first intention and the patient had perfect control over the bladder.

Referring to the fact that this variety of fistula is quite rare, the writer attributes the difficulty hitherto experienced by operators and the frequency of failure to their attempt to denude and introduce sutures, without first trying to enlarge the field of operation. The advantages claimed for his method were not only increased room and a clear view of the fistula, which could be closed directly, but the assurance that, after healing, the cervix remained patent. It was only applicable to lateral fistulæ; those situated in the median line must be treated according to the usual plan. Cauterization or hysterokleisis might be tried in case the attempt to close the fistula directly was unsuccessful.

 THE DIAGNOSIS AND TREATMENT OF IRREGULAR UTERINE HEMORRHAGES.

EICHHOLZ (reprint from *Frauenarzt*, 1887) holds that, in cases of metrorrhagia in which the uterus is not considerably enlarged, it is seldom necessary to palpate the uterine cavity in order to determine the exact pathological condition. Endometritis fungosa may be suspected from the presence of subinvolution, menorrhagia and leucorrhœa; retained placental fragments, from the history of the case. However, it is unnecessary to make a positive diagnosis between the two conditions, since curetting is equally applicable to both. Solid intra-uterine tumors may be recognized by introducing the sound, but, in order to establish the diagnosis, it is necessary thoroughly to dilate and palpate the interior of the uterus. The latter procedure should also be adopted when the presence of a malignant growth is suspected. Dilatation of the cervix should, if possible, be effected by means of blunt-pointed dilators; laminaria tents should be used only when the uterine tissue is very rigid.

 MALIGNANT ADENOMA OF THE CERVIX UTERI.

FÜRST (*Zeitschrift für Geburtshülfe u. Gynäkologie*, Band xiv. Heft 2) arrives at the following conclusions from his studies on this subject:

1. Simple adenoma of the uterus, or glandular hyperplasia, which results

in increase in the number and size of the glands, without marked formation of new cells, is to be regarded as benign; nevertheless, it ought to be thoroughly excised, since it may become malignant.

2. Adenoma, or destructive glandular hyperplasia, which presents under the microscope new-formed, atypical gland-processes surrounded by connective tissue rich in round cells, and in which the glandular epithelium shows a tendency to proliferate and invade the deeper parts, should be regarded as undoubtedly suspicious. In such cases excision is not enough, but the entire uterus should be extirpated, when a radical cure may be expected.

3. Adeno-carcinoma of the uterus, in which the normal glands are destroyed and the deeper tissues are infiltrated with leucocytes and invaded by solid epithelial processes, is unquestionably malignant, and even extirpation offers only a doubtful chance of a radical cure.

4. The differential diagnosis between these various conditions depends less on symptomatology than on the results of the microscopical examination. Where malignant disease is suspected, a piece should be excised and examined at once.

5. Operative interference, unless it is thorough, does more harm than good, since it simply favors a recurrence of the disease, and recurrence in a worse form.

SUPRA-VAGINAL AMPUTATION.

TERRILLON (*Annales de Gynécologie et d'Obstétrique*, May, 1888) reports sixteen cases of supra-vaginal amputation of the uterus for fibroid tumors, with five deaths. His conclusions, based on the observation of sixty cases of uterine fibroids, as well as on his studies of reported cases, are as follows:

Uterine fibroids may give rise to serious and even fatal results, by reason of their size and the hemorrhages and mechanical pressure which they cause. When serious symptoms arise, surgical interference is indicated—either castration or supra-vaginal amputation. The latter is a serious operation, the mean death-rate at present being thirty per cent. Removal of the appendages is preferable, since it is less dangerous and is followed by diminution of the hemorrhages and interruption of the growth of the tumor.

THE IMMEDIATE AND REMOTE RESULTS OF OPERATIONS FOR THE CURE OF PROLAPSUS UTERI.

COHN (*Zeitschrift für Geburtshülfe u. Gyn.*, Bd. xiv. Heft 2) reports the results of his observations at Olshausen's clinic and in the private practice of the late Professor Schröder—105 cases in all. Of these, 74 were heard from or were examined some time after operation; 46, or 67.5 per cent., were permanently cured.

His deductions are as follows:

1. The continuous catgut suture assures healing by first intention with greater ease and rapidity of operation. It gives an even line of union and a good, solid cicatrix.

2. Colpo-perineorrhaphy may permanently cure an extensive prolapse.

The reason why the percentage of cures in the case of hospital patients alone was relatively so small (56.6 per cent.) was because the wounds were

never really healed, the operation was imperfect, since only anterior colporrhaphy was done, and, above all, the patients were not only obliged to work hard, but pregnancy often occurred soon after they returned home.

In order to obtain permanent relief it is important to operate as early as possible, to narrow the vagina as a whole (by doing a *high* posterior colporrhaphy), and to build up a firm perineum; the broader the latter, the firmer the pelvic floor, and the more the vagina is carried forward, the stronger are the chances of obtaining permanent cure.

MYOMATA AND MYOMECTOMY.

Communications on these subjects made before the German Gynecological Society by MARTIN, ZWEIFEL and FRITSCH, possess considerable interest.

Martin, referring to 205 operations, which he had performed for the removal of fibroid tumors of the corpus uteri, stated that in seventy specimens he found evidences of retrograde processes, suppuration, fatty degeneration, etc. Eleven showed general œdema; in the latter cases the most severe hemorrhages were noted, and the patients were all very anemic. Sarcomatous degeneration was observed in six, but in no instance were there appearances indicating a transition to carcinoma, although this form of malignant disease was associated with myomata in nine cases, the cervix being affected twice, and the corpus uteri seven times. The latter circumstance militated against the prevailing notion that women with fibroid tumors were not liable to cancer of the uterus.

ZWEIFEL, in discussing the treatment of the pedicle, criticised Olshausen's method of dropping into the cavity the stump surrounded by a rubber ligature, because necrosis was sure to follow. Schröder's method of suturing the opposite edges of the stump, and then treating it by the intra-peritoneal method, was open to the serious objection that it did not entirely control the oozing. The speaker was accustomed to ligate the pedicle in several portions, after tying off the broad ligaments in three sections. After cauterizing the cervical canal, the rubber cord was removed and the stump was covered with peritoneum. He had treated the stump in this manner in his last nine operations, and had found that the hemorrhage was surely controlled, while the stump could be trimmed down to the smallest possible size; his results had been better than after his former operations.

FRITSCH said that Zweifel was wrong in affirming that the stump necrosed when the permanent rubber ligature was employed; he had found it free from danger. He had tried Schröder's method for a time, but had abandoned it, because the mortality was seventy-five per cent. His method of performing myomotomy was as follows: After lifting the tumor out of the cavity, he ligates the broad ligaments, applies the temporary rubber ligature, then divides the uterus in a vertical direction and excises the myoma. The uterine wound is then closed, and the stumps of the broad ligaments are sutured near the middle of the wound. The peritoneum is sewed to the edge of the stump, so that the wound in the uterus is extraperitoneal. Lastly, the abdominal wound is closed, the sutures being left long, and allowed to protrude. They are removed gradually in the course of two or three weeks. He had operated thus successfully nineteen times. In the case of large myomata, growing outward between the folds of the broad ligaments, he preferred

enucleation; the sac might then be drained through the vagina, or, better, included in the lower angle of the wound. He believed that the enucleation of myomata, when performed by this method, was a better operation than castration, being simple and safe, and furnishing positive results.

OLSHAUSEN, in discussing the above, stated that he had, in upward of 140 cases, dropped the rubber ligature into the peritoneal cavity, and he believed that the danger of suppuration was slight if strict antisepsis was observed, although he acknowledged that the stump was imperfectly nourished. He thought that Zweifel's method required too much time, and that it might be dangerous to transfix the cervix as described.

DOHRN had practised Olshausen's method 150 times and thought that no danger was to be apprehended from necrosis of the stump, since the latter was sufficiently nourished by the peritoneum.

HOFMEIER, FEHLING, BREISKY and KALTENBACH favored the extra-peritoneal method, though the first thought that Schröder's plan, after it had been improved, had a future before it. MARTIN said that he had operated according to every method, and still preferred Schröder's.

INJURY TO THE BLADDER DURING LAPAROTOMY.

SÄNGER (*Münchener med. Wochenschrift*, June 5, 1888), in a paper on this subject, says that the bladder may be incised during laparotomy, by extending the abdominal wound too far downward; it may be torn while separating adhesions, or it may be mistaken for a cyst and punctured. In a case of his own the writer mistook a portion of the bladder, which was drawn upward and embedded in adhesions, for the pedicle of a cyst. He ligated it in three portions and divided it; on recognizing his error, he drew the bladder up and brought the peritoneum together around the stump, attaching the latter in the abdominal wound. The patient had a moderate vesical catarrh, but recovered without having a fistula.

In another instance, in which the same accident occurred and was similarly treated, a mural abscess developed four weeks after the operation and ruptured, leaving a fistulous opening into the bladder which rendered a second operation necessary.

In every case of laparotomy the operator ought to observe carefully if the bladder is drawn upward, and the urachus is still partially patent.

MENSTRUATION AFTER DOUBLE OÖPHORECTOMY.

An interesting discussion on this question took place at a recent meeting of the Leipzig Obstetrical Society (*Centralblatt für Gynäkologie*, June 2, 1888). It was introduced by HENNIG, who announced at the outset that he agreed entirely with Bischoff's theory of menstruation. So long as it was certain that no remains of either ovary or a supernumerary gland was left at the time of operation, a periodical discharge of blood from such patients must be regarded as abnormal. He was inclined to believe that a small portion of the cortex of one ovary, containing Graafian vesicles, might be included in the ligature.

In the subsequent discussion, SÄNGER stated that out of forty cases of castration he had observed continuous periodical hemorrhages in only two,

in one of which the persistent flow was due to retro-displacement of the uterus; it ceased after hysterorrhaphy had been performed. The speaker concluded that when no other "focus of irritation" is present, persistent menstruation after castration can only be due to some disease of the uterus.

ZWEIFEL cited a case of recurring hemorrhage after double salpingo-oöphorectomy, which eventually ceased spontaneously. He believed that the metrostaxis would always cease in time, and that such would be found to be the after-history of most of the reported cases of persistent menstruation.

INTESTINAL OBSTRUCTION AFTER OVARIOTOMY.

HIRSCH (*Archiv für Gynäkologie*, Bd. xxxii. Heft. 2) presents at length the results of his observations and studies on this important subject. Intestinal obstruction following laparotomy is due, he says, to three causes. It may be direct, where a coil of intestine becomes adherent to the abdominal wound, and occlusion results from the traction of the cicatrix. Secondly, simple aseptic peritonitis may follow the operation, resulting in the formation of adhesions which imprison the intestines, limit the peristaltic movements, and thus lead to fecal impaction and complete obstruction. Thirdly, without the occurrence of any inflammation whatsoever, a loop of intestine may be imprisoned between the pedicle and the pelvic or abdominal wall, especially after supravaginal amputation when the stump is treated according to the extra-peritoneal method. Intestinal occlusion is comparatively common, Sir Spencer Wells having reported 11 deaths from this cause in 1000 cases of ovariectomy. Usually the obstruction occurs soon after the operation, but several years may elapse before the accident takes place. In one instance, death from this cause occurred nine years after. The symptoms are those usually accompanying obstruction—persistent vomiting, constipation and tympanites. Death is preceded by symptoms of collapse; the pulse and temperature may remain normal, or there may be high fever, while no evidence of acute peritonitis is found at the autopsy.

The diagnosis is always rather obscure, so that the surgeon shrinks from reopening the cavity. Obstinate constipation and fecal vomiting are the only positive signs, since vomiting, tympanites and failure to pass gas per rectum may be due to diffuse peritonitis, although in a mild degree they are a common accompaniment of abdominal operations before the bowels have moved. Obstruction is recognized most clearly when it occurs some days after operation. The seat of the occlusion can sometimes be recognized by palpation, especially if it is in the neighborhood of the incision. There are more pain and vomiting when the small intestine is imprisoned, but less meteorism than is present when the large gut is occluded. Diminution of the daily quantity of urine and an increase in the amount of indican point to obstruction of the small intestine.

The prognosis is extremely unfavorable. Of the fourteen cases collected by the writer, only one recovered—after secondary laparotomy.

With regard to prophylaxis he quotes from various authorities, notably Kaltenbach, Müller and Olshausen. The former advises spreading out the omentum carefully over the intestines, after separating all adhesions, avoiding injury of the parietal peritoneum (by bruising, the cautery, etc.), and

closing the peritoneal wound accurately. Müller discards abdominal bandages after the operation, except in cases in which it is desirable to check oozing, and washes out the cavity with large quantities of sterilized water if there have been intestinal adhesions. Since Kaltenbach has irrigated with bichloride solution he has not seen a case of intestinal obstruction, while out of twenty-four in which carbolic acid was used, there were three fatal cases.

The obstruction has been removed by washing out the stomach. An operation should be done early, if at all; when performed a short time after the primary laparotomy it offers the best results.

CARCINOMA OF THE FALLOPIAN TUBE.

ORTHMANN read a communication on this subject before the Gynecological Society of Berlin (*Centralblatt für Gynäkologie*, May 26, 1888). Alluding to the fact that Kiwisch had found carcinoma of the tube only eighteen times in seventy-three cases of cancer of the uterus, and Dittrich only four cases out of ninety-four of general carcinomatous disease, the reader stated that his researches in the literature of the subject had yielded accurate descriptions of only thirteen cases, in nine of which the uterus, and in four the ovaries were primarily affected. The medullary form of cancer is most common; it may originate in either the mucous, muscular or serous coat of the tube. Papillomata of the tube (recently described by Doran) may readily be mistaken for malignant growths. Three cases of carcinoma tubæ occurring in Martin's clinic were described, in one of which the disease was primary. Orthmann concluded from this that primary cancer of the tube does occur, although in the great majority of cases it is secondary to disease of the uterus.

In the discussion which followed, RUGE said that he had never seen a case of primary carcinoma tubæ; he was inclined to believe that disease of this duct is more often secondary to malignant affection of the ovaries than to cancer of the uterus.

WINTER recalled an interesting case of carcinoma of the ovary, in which the disease appeared to have spread by contiguity to the adherent abdominal end of the tube, the rest of the latter being perfectly healthy.

OLSHAUSEN cited a case of double ovarian tumor, in which, after removal of the cysts, a mass as large as a hazelnut was found in the left tube; microscopically it showed the structure of endothelioma. Olshausen thought that the distribution of the lymphatics explained the fact that the tubes share so rarely in malignant disease of the ovaries.

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CONTRIBUTION TO THE DIAGNOSIS AND SURGICAL TREATMENT OF TUMORS OF THE CEREBRUM.

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III.

REMARKS ON THE SURGICAL REMOVAL OF BRAIN TUMORS.

[By DR. WEIR.]

The attention of surgeons was instantly arrested, in 1884, by the publication in the *Lancet* of December 20th, of that year, of an account of the excision of a tumor from the brain, published by Dr. Hughes Bennett and Mr. Godlee. The patient presented signs of incomplete and progressive left-sided hemiplegia beginning in the face and tongue, and of double optic neuritis, which, with other symptoms of less importance, led Dr. Hughes Bennett to arrive at the following conclusions:

First, that there was a tumor in the brain; secondly, that this growth involved the cortical substance; thirdly, that it was probably of limited size, as it had destroyed the centres presiding over the hand, and only caused irritation without paralysis of the centres of the leg, face and eyelids which surrounded it; and, fourthly, that it was situated in the neighborhood of the upper third of the fissure of Rolando.

This diagnosis having been made on the 25th of November, 1884, Mr. Godlee trephined the skull over the region corresponding with the upper part of the fissure of Rolando. No tumor was visible after the dura mater was slit up, but the ascending frontal convolution seemed to be somewhat distended. An incision about an inch long was made into the gray matter

in the direction of the bloodvessels, and at a quarter of an inch below the surface a morbid growth was found. This was carefully removed and it proved to be a hard glioma about the size of a walnut. It was easily enucleated. The hemorrhage was arrested by means of the galvano-cautery and the wound brought together by sutures. The patient did fairly well up to the twenty-sixth day, when he was suddenly seized with a rigor, fever and pain in the head. A hernia cerebri of large dimensions supervened and death occurred on the twenty-eighth day after the operation. At the autopsy the brain substance was normal, though suppurative meningitis was found at the lower border of the wound spreading downward toward the base of the brain on the same side.

This brilliant, though unsuccessful, operative interference for the removal of a cranial growth was followed, after a lapse of some time, by another fatal case in February, 1886, and was reported in the *Pacific Medical and Surgical Journal* for April of that year by Drs. J. O. Hirschfelder and Morse, of San Francisco.

In this instance the cerebral disease had existed for eighteen months, beginning with occipital pain and paresis of the left leg and progressing with double optic neuritis up to involvement of both upper extremities and the left side of the face. The diagnosis was made of a tumor of the brain situated in the motor centres around the sulcus of Rolando on the right side, and from the fact that the face, arm and leg centres were apparently affected, the middle portion was supposed to be with certainty involved; or, more correctly stated, it was believed that the neoplasm was located in the middle portion of the gyrus post-centralis.

Three buttons of bone were removed by a trephine, and an opening made through the skull three inches across. The portions of cranium removed were unusually thin. On cutting through the dura mater, the parts beneath immediately pushed through the opening, protruding half an inch beyond the bone level, and presented an abnormal appearance. No pulsation of the brain was observed. The outgrowth was excised only in part, it being difficult to separate it entirely from the healthy brain tissue. The mass removed was about two and a half cubic centimetres in size and a microscopic examination proved it to be a glioma. The wound was dressed with lint soaked in carbolized oil and over this a thick layer of cotton batting. On the seventh day death resulted from encephalitis. No post-mortem was allowed.

Dr. Hirschfelder, in concluding his report, says that the unfavorable result after the operation in this case must be ascribed to the character of the tumor. The soft glioma was continuous with the adjoining brain tissue, so that its complete separation was impossible without destruction of a large portion of the cerebrum. Had it been a hard tumor that could have been readily isolated, it is very probable that the patient would have recovered.

The most marked impetus to the treatment of cerebral tumors was, however, imparted by the publication of a paper entitled "Brain Surgery," by Victor Horsley, in the *British Medical Journal* of October 9, 1886. Mr. Horsley, I may here say, combines in himself the skill of a surgeon with the knowledge of a neurologist. In this article there are reported, in addition to two cases of brain excision for epilepsy, the details of a case of cerebral tumor successfully removed by an operation. I transcribe the latter only briefly:

The tumor was tubercular in character, and was found in the ascending frontal and parietal convolutions at a line of junction of their lower and middle thirds. Before closing the wound in this instance, the centre of the

thumb area, which had caused the most signal symptoms, was removed by a free incision. No tubercular disease was recognized elsewhere in the body.

In this paper Mr. Horsley set forth the operative technique which his experience on animals, as well as on human subjects, had led him to adopt; in this were several departures from the ordinary methods of operation in cranial injuries, etc. In addition to a strict antisepsis, he makes an oval scalp wound instead of the ordinary crucial one, and resorts to a very large opening in the skull, using a trephine two inches in diameter, and replacing the chopped-up fragments of bone when possible. The dura mater he directs to be incised in a circular manner for four-fifths of the circumference, and the flap to be turned back and replaced and held *in situ* by sutures at the close of the operation. In incising the brain, the cut, he says, should be vertical and directed into the corona radiata to avoid damage. Hemorrhage should be checked by ligature or by pressure. The cautery should not be used. Drainage of the wound is necessary. Stress was laid by him, moreover, on the immediate bulging out of the brain as indicative of a tumor. This is not met with, he states, in healthy animals on whom he has tested this experimentally. This is, therefore, a symptom of intracranial pressure of high value.

Subsequently, in *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for April, 1887, Mr. Horsley gave, with, however, only very scanty outlines, a case in which, at the time of the operation, there were absolute hemiplegia and coma, produced by a tumor which, when removed, weighed four ounces; and he also reported a third case of a diffuse tumor which invaded the shoulder region and caused constant clonic spasm of the shoulder- and elbow-joint, besides severe fits beginning in the same region. Subsequently the same surgeon, in the *British Medical Journal* of April 23, 1887, gave further details of these two cases, in which the important item was presented that the patient from whom the large tumor was removed lived for three months, when symptoms of recurrence began to show themselves, and death finally took place six months after the operation, and that in the other case, up to the date of the report, a year and more after the operation, no recurrence had manifested itself. Horsley also reported in the last article the removal of a fourth tumor, which, however, involved the right lobe of the cerebellum, and in which death occurred nineteen hours after the operation. In this case the tumor was tubercular in its character, and with it existed tuberculosis of other viscera. In the other two cases the tumors were sarcomatous in nature.

In February of last year Dr. W. R. Birdsall,¹ of New York, placed under my surgical care a case of tumor of the brain which had been

¹ Brain Surgery. Removal of a large Sarcoma, causing Hemianopsia, from the Occipital Lobe. By W. R. Birdsall and R. F. Weir. *Medical News*, April 16, 1887.

localized by him in the right occipital region, hæmianopsia being the principal symptom. An opening two and three-fourths by two and a quarter inches was made in the occipital region of the cranium, and a tumor weighing five and a quarter ounces removed. The patient, however, succumbed from the shock and hemorrhage which followed the operation. In this case, also, pulsation was absent when the skull was cut through.

Chronologically, the case which is the subject of the present paper would come next in order, but as a wide and proper construction of the term cerebral tumor should embrace those of the cerebellum, to the foregoing list should be added two others, the account of one of which appears in the *Lancet* of April 16, 1887, and was presented by Mr. Bennett May, of Birmingham, England.

From the symptoms, a tumor in the cerebellum was believed to be indicated, and the paralysis which existed in the right external rectus led to the conclusion that the tumor was in the right lobe and was growing downward and forward and compressing the right sixth nerve. It was thought also that the tumor was probably tubercular, though no other part of the body gave evidence of this disease. As the mode of incision for attaining access to a growth in this region has not heretofore been given, it is shortly detailed. A curved incision, with the convexity upward, reaching a little above the external occipital protuberance, was carried by Mr. May across the back of the head from one mastoid process to the other. The scalp and subjacent parts were then carried down as a flap by separating all the muscular attachments from the bone until the neighborhood of the foramen magnum was reached. A trephine was applied and this opening enlarged easily by a rongeur forceps, as the bone was thin. The extreme bulging of the dura mater gave evidence of great intracranial pressure. The membrane was opened and turned up by incisions along the three sides of the aperture in the bone. The cortex of the cerebrum appeared quite healthy, but at one spot a little outside the centre of the exposed space palpation gave an ill-defined feeling of hardness beneath the surface. An incision was here made with a tenotome, and, on entering the finger, there was detected the hard mass of a tumor nearly an inch below the surface. It was dug out of its bed cleanly by the handle of a small teaspoon. It was larger than a pigeon's egg, hard and horny on the exterior and caseating in the centre. The hemorrhage was trifling, but the patient, however, succumbed from shock a few hours afterward. No post-mortem examination was permitted.

On the 1st of October Mr. Suckling, of Birmingham, also removed a tumor from the cerebellum by a nearly similar procedure, reversing, however, the incision through the scalp. The account of this case was published in full in the *Lancet* of October 1, 1887.

After a crucial incision had been made through the dura mater the cerebellum at once bulged into the wound, and its tissue appeared darker in color than normal. No hardness could be felt with the finger. The brain tissue was therefore incised. The hemorrhage which followed was very free. A finger introduced into this wound recognized "softness" in all directions. Part of the cerebellar substance was cut away and the wound closed after a drainage tube had been placed in it. The patient died within forty-eight hours after the operation. The left lobe of the cerebellum was found enlarged and hollowed out in the centre. This cavity was seen to be surrounded by soft vascular tissue of a pinkish color which, under the microscope, showed the structure of a glioma. The new growth had evidently occupied the whole of the left lobe and had also invaded the middle lobe.

In the *Medical News* of December 24, 1887, is an interesting case of cerebral tumor only, however, scantily referred to, removed by operation by Dr. W. W. Keen, of Philadelphia, which weighed three ounces and forty-nine grains, and which extended from the fissure of Sylvius into the first frontal convolution, and from near the fissure of Rolando into the bases of the three frontal convolutions.

The initial symptom in the case was an epileptic attack with right-sided deviation of the head and eyes, followed by paralysis of the right arm and leg, and by aphasia. The tumor was a fibroma. Ten days after the extirpation the patient had a sharp rise of temperature to over 104° , with diarrhœa and marked bulging of the flap; paresis of the right leg; paralysis of the right arm and right lower face with aphasia. These severe pressure symptoms, however, subsided and recovery took place.

From the foregoing presentation of surgical work in the cranial cavity for the removal of neoplasms, it would appear that the credit of the inauguration of this important improvement was due to the activity of the English mind, but on October 1, 1887, in the *Lancet* appeared a modest "Contribution to Endo-cranial Surgery," by F. Durante, of Rome, which showed that in May, 1884, prior even to Godlee's operation, Durante had removed a tumor the size of an apple from the brain.

From the loss of memory and of the sense of smell, in the absence of other nerve symptoms save melancholy and a sense of vacuity in going about, Durante was led to believe in the presence of a tumor beneath the cranium. The displacement of the globe of the eye, which also existed, led him to expect that the tumor had penetrated the superior arch of the orbital cavity. A large opening in the left frontal bone was made and the dura mater found to have been perforated from absorption by the tumor opposite to the frontal eminence. The tumor was scooped out piecemeal at first, and subsequently the mass was enucleated. The hemorrhage was slight and easily controlled by a hemostatic tampon of sublimate gauze. The tumor occupied the left anterior fossa of the cranium. It extended to the right and rested upon the cribriform lamina, which it had destroyed. Posteriorly, it reached to the clinoid tubercles in front of the sella turcica. The left anterior cerebral lobe was greatly atrophied. The orbital arch was decidedly depressed, but was not perforated, as had been anticipated. The patient made a perfect recovery. She was seen four years later and was then in perfect health. The tumor under the microscope presented a multiform fibro-cellular structure of sarcoma.

This case is not only of great importance chronologically, but is of greater importance in respect to the possibility of permanent recovery after removal of a sarcomatous tumor. In cases like that of Keen, a fibroma, no recurrence is to be expected; with sarcoma, even well encapsulated, the possibility of its return, as in other parts of the body, must be considered, and especially as we are loath, in the brain, to go wide from the tumor, a condition which, when complied with in other regions, largely contributes to a permanent success when removing such neoplasms.

With infiltrating sarcoma and gliomata the prognosis must be very discouraging unless increasing experience enables the surgeon to proceed with more boldness, since it must be permitted to assume the risk

of even increased permanent disability or of destruction of life itself in such otherwise utterly hopeless cases.

Bearing on the point of the benefit to be derived from the operation, attention should be given to the fact that in two of Horsley's cases in which the tumors were sarcomatous, in one, the patient's life was prolonged for six months, and in the other, the patient was still alive a year and four months later.

It is also to be noted that in the three cases in which the tumor was tubercular, in but one was evidence of the existence of this disease to be found in other parts of the body, a fact somewhat at variance with the statements of White on this subject.

It seems too early in the history of this operation for a decision to be reached as to what kind of tumors may contraindicate an attempt for their removal. It still appears proper surgery to undertake the operation of opening the skull (certainly as an exploratory procedure) for those cases which indicate sufficiently clearly by symptoms that a progressing pressure, as from a tumor, an abscess, an intra- or extra-cerebral blood-clot, or that a continued irritation effect, such as results from cicatrices, gummous residua, or the like, is present, and not to be relieved by the ordinary means of treatment.

Before proceeding to the consideration of the operative measures to be observed I venture to allude to two more cases of cerebral tumor, though in one, operated on by Dr. Markoe,¹ some doubt is admitted by that surgeon as to the nature of the mass removed. Its microscopic revelations make it more probably to be an inflammatorily changed cerebral convolution.

The operation was performed on a young man, who had, following a blow on the left side of the head, great sensitiveness and headache over the site of the injury, with frequent nocturnal epileptiform attacks. No paralysis existed. Exploratory trephining was resorted to on the flattened portion of the skull corresponding to the old injury. Nothing was found in the bone or dura mater of an abnormal character. On cutting through the latter two unequal masses of a rounded shape lying close to each other, about one inch in diameter, were exposed and removed with the handle of the scalpel. Subsequent examination showed this to be normal cerebral tissue, with a deposit of small spheroidal cells in the lymph spaces surrounding the swollen normal ganglion cells. The patient recovered from the operation after being temporarily aphasic, and remained free from pain and epileptic seizure up to the date of the report, nine months afterward.

It is not without interest, perhaps, to epitomize a case related by Dr. Sands, in the *Medical News* of April 26, 1883, which not only shows how success might have been achieved at an early date in the removal of a cerebral growth, but I beg to present it, furthermore, as an example of the advantages of always raising or incising the dura mater in these exploratory operations. Had it then been resorted to, the credit of first

¹ Removal of a Tumor (?) from the Brain, by T. M. Markoe, M.D., *Medical News*, November 5, 1887.

removing a cerebral tumor might have been attributed to American surgery. It is true, that this case had for the localization of the trouble the assistance of a well-defined traumatism, and, therefore, could not be considered, even had it proved successful, as brilliant in the diagnosis as are the cases that have been operated upon by Horsley and others.

Sands's patient had, two weeks after an injury, an epileptic seizure, which was repeated at a week's interval, with right facial paralysis, and slight hemiplegia of the same side and aphasia. Tenderness was still felt over the site of the original injury. Syphilis was denied. An exploratory operation exposed the dura in front of the left fissure of Rolando, two inches above the ear. Pulsation was absent. No fluctuation could be felt. A large hypodermatic needle was thrust through the dura in three different places to the depth of an inch, but nothing was withdrawn. In making two other punctures through the dura, the needle met with considerable resistance, and the idea of a tumor was suggested, but no further operative procedures were carried out. The wound was closed with fine catgut sutures, and antiseptic dressings were applied. On the eighth day after the operation death occurred from encephalitis. At the *autopsy*, the dura around the bone opening was found adherent to the pia, and just underneath it, and behind the posterior central convolution, there was found a gummy tumor one inch in diameter.

Although the clinical experience so far obtained in this branch of cerebral surgery is not large, yet it suffices, even in its limited extent, to settle some two or three points of interest. The first of these is of weight when we admit that, though localization of brain lesions has become tolerably exact in certain portions of the brain, yet even in these portions—motor regions—doubts may arise which can only be settled by use of the exploratory operation. Our slight experience has, however, shown in the case of large openings in the cranium, that when the operation is conducted under antiseptic precautions, it is devoid of any great risk in itself, and that the taking away of the support to the cerebral mass is not followed, as one might naturally be led to expect, by serious œdema of the brain.

As to how this exploratory operation should be conducted, this will be deferred for subsequent consideration.

Although large openings in the skull are so well borne, a point that is admitted by Bergmann in his recent article,¹ yet this same surgeon contends, from theoretical reasons apparently, against surgical procedures being applied for the removal of large tumors, on account of their proneness to be followed by fatal œdema, and he sets forth a dictum that large tumors, or patients the subjects of any tumor, in a state of coma due to existing œdema, should not be operated upon. To disprove this, it will be recalled that in one of Horsley's cases a tumor was removed which weighed four and a half ounces, and which, at the time of the operation, was associated with absolute coma and hemiplegia, and yet

¹ Die Chirurgische Behandlung von Hirnkrankheiten. Archiv für Klinische Chirurgie, Band 36, 1888, Heft. iv.

recovery took place; and Keen's case, in which the tumor weighed over three ounces, may also be cited.

Another point that comes to notice from a consideration of the cases quoted in this paper, is that the operative technique is not a difficult one, and that the hemorrhage which occurs from the scalp wound, and from the dura or pia mater, though at times troublesome, is easily controlled. I beg also to state here a little more particularly, because some confusion has occurred from the history of the case that I reported of the removal of a large cerebral tumor in the occipital lobe (my first and fatal case, and previously alluded to in this paper), that the wound was not closed until after all the oozing of blood had been apparently checked by the temporary pressure of sponges passed into the cranial cavity, and retained there for a short time. The slight weeping of blood that was seen here and there over the depressed brain surface, after the final taking away of the sponges, was easily controlled by the light pressure of the iodoform gauze tampon resorted to. The hemorrhage that imperilled, or contributed probably to the patient's death, developed itself later. Had it been noticed at the time, the expedient which a review of the case suggested, of using a clamp for a vessel deep in the cranial tissues, would have been employed. Hemorrhage of itself cannot be considered, in my opinion, as an objection, or a contraindication to the operation, since this can be checked as well in this region as anywhere else. The principal difficulty that stares us in the face, from a surgical standpoint, is that these tumors, being often situated some little distance beneath the surface, the fact of their being encapsulated or infiltrated, cannot be determined until the operative stage has been considerably advanced. An encapsulated tumor is justifiable to be removed, no matter what its size may be. If one meets a tumor infiltrated into the surrounding brain tissues, it goes almost without saying, that we can hardly expect, unless it is comparatively small, to remove it satisfactorily without perhaps doing irretrievable damage to the surrounding parts, or, possibly, without seriously imperilling the patient's existence, yet I fancy that the present case, reported by Dr. Seguin and myself, may be thought worthy of imitation in deposits of this kind and of moderate size. In this case, it must be admitted that the growth cannot be said to have been at all widely removed, and it has been an agreeable surprise to find, so long after the operation, no decided evidence of a recurrence of the tumor.

The statistics which all who are interested in the study of cerebral tumors naturally refer to, by reason of their thoroughness, are those of Dr. W. Hale White, in *Guy's Hospital Reports*.¹ I beg, for the sake of completeness, to submit a synopsis of this report, although it has been partially used by me elsewhere.

¹ Third Series, vol. 28, 1885-86.

Out of White's one hundred cases of autopsies of cerebral tumors, forty-five were tubercular, and more than half of these occurred in children under ten years of age; and when found in adults, there was usually tubercular disease elsewhere. Like the carcinomatous tumors, five in number, all were multiple and secondary. Both these kinds of tumors are, therefore, unsuitable for surgical consideration.

This statement is corroborated by Bergmann chiefly for the reason that it is not possible to enucleate tubercular masses in the brain with a sharp spoon, as in the bones or skin, and also that the operation itself might favor the dissemination of the tubercular process over the brain membranes, and give rise, in this way, to tubercular meningitis. The only experience so far that we have had in this class of tumors, in respect to their surgical behavior, is the cerebellar tumor of Bennett, which not only existed primarily but was also easily and completely removed, though a fatal result followed the operation. Horsley also removed, with a similar bad result, a cerebellar tumor of tubercular character, weighing seven drachms, without operative difficulty, but the autopsy showed the other statement to be correct, since generalized chronic tubercles were found in various viscera of the body. Out of twenty-four gliomata and ten sarcomata (the cysts being only four in number and too rare to be considered), which tumors alone offer a reason for surgical interference, there were only four growths which could have been removed with any certainty, two of which were gliomata and situated in the cerebellum. Only one of the ten sarcomata was removable. White, moreover, found, when considering the question clinically as to how many of these hundred tumors could have been sufficiently localized as to warrant a surgical interference, that three tubercular tumors and four gliomata, one sarcoma, two cysts, one myxoma and two of the three doubtful growths might have been removed, or, in other words, that about ten per cent. of the number might have been operated upon, *provided a correct diagnosis could have been made.*

The difficulties that attend this branch of surgery must be constantly kept in view, not so much in the operative technique as in the possibility of not finding the sought-for tumor. I have already reported¹ one case, in which failure resulted, though the patient lived several months after the operation. Another case has been reported by Dr. Graeme Hammond;² a third was operated upon by Dr. Gerster, of New York; and a fourth by Dr. Markoe. The two latter have not yet been published. One instructive point has appeared in connection with the case of my own, the first one in this short list of unsuccessful cases, which was, that though no tumor was found, not only was recovery prompt from the operation, but the patient's symptoms were materially improved, from

¹ Medical News, March 5, 1887.

² Medical News, April 23, 1887.

the relief of the pressure by the taking away of a goodly portion of the skull, for in this case I did not replace the bone, as I did in two other instances. This result may afford an additional reason for the justification of an exploratory operation, since, if no tumor be found, relief to the brain pressure can be at least temporarily obtained.

This relief of cerebral pressure can, I think, moreover, be properly applied in other severer conditions, such as, for instance, progressing apoplectic hemorrhage, etc.¹

Remarks on the Operative Procedures.—While no surgeon can yet be said to have had an experience in modern brain surgery sufficient to speak dogmatically as to methods of technique, yet the outcome from a study of the cases of others, together with the personal care of seven of these important cases—three of tumor, three of cerebral abscess and one of epilepsy—has caused me to appreciate the value of certain points which I now venture to bring forward, some in reiteration, and not of my own evolution, and some of novelty.

The use of a curved flap, both of the scalp and of the dura mater, which was suggested by Horsley, is of decided advantage in securing protection to the brain after the completion of the operation. But the large incision in the skin brings with it an increased annoyance from the hemorrhage which often persists from the slipping of ligatures and clamps from the dense tissues of the scalp. I had intended, in my next case, to transfix the scalp parallel and just exterior to its edge with acupressure needles, to secure a clean operative field, but I find that the suggestion made to me by Dr. M. A. Starr, of tying a rubber band tightly around the head on a line with the occipital protuberance, is of considerable value. The arterial hemorrhage is thus completely controlled, and the remaining venous flow from the vessels going through the skull to the cranial sinuses is materially diminished. The expedient of indicating on the bone itself the site of the trephine centre is also of some importance. The careful outlining of the region to be explored on the

¹ As this passes through the printer's hands, the *Lancet* of April 7, 1888, reports a case of cerebral tumor operated on by Mr. F. A. Heath, in which, though the tumor was not removed on account of adhesions to the anterior fossa, the benefit derived from the relief to the pressure effects was most decided. "The patient recovered promptly from the operation, with the formation of a hernial protrusion of the brain under the healed scalp, and shortly afterward regained a considerable power of motion in the paretic limbs and remained free from epileptic attacks for over two months and for a long time was rid of the headache. He was seen thirteen months after the operation, and, though completely blind, could walk about very well. Of late, the headache had returned and the epileptic attacks had become more frequent."

In the same journal is the report of the post-mortem of a tumor situated on the auditory nerve, and with it is the comment of Mr. Victor Horsley that it might have been removed by an operation which he had recently advocated, of incising the tentorium and ligating, if necessary, the lateral sinus. My own observations, recorded elsewhere, have shown that the sinus can be lifted out of the way without difficulty, by raising up the dura, and a previous ligation of the longitudinal sinus leads me to believe in the possibility of doing the same with the lateral sinus, as indicated by Mr. Horsley. I have exposed accidentally this latter sinus in several instances and also wounded it without harm. (See "Remarks on the Surgical Treatment of Brain Suppuration following Ear Disease," *Medical Record*, April 9, 1887.)

shaven scalp is of no avail after this has been lifted away, and the plan suggested in the history of the present case answered its purpose very well.

The cranial opening should be a large one. Horsley applies the two inch trephine, which I now exhibit, in two places and then cuts away the intervening ledge of bone. Lately he has used, as did Graeme Hammond, a dental or electrical bone-cutter, which permits greater rapidity in work. The enlargement with the rongeur after the removal of two or three buttons of bone can, however, be quickly done by a muscular surgeon with Luer's or Robert's rongeur forceps. Not only is a large opening required for the removal of a growth, and they have been extracted successfully over four ounces in weight and as large as an apple, but it is required for exploratory purposes. It must be remembered that many times the surgical interference is entered upon with this view alone, and as the localization cannot always be perfectly made out, a considerable portion of the brain should be exposed to palpation and sight. I said purposely brain and not dura, for I cannot but think it a faulty procedure to refrain from opening the dura mater after cutting through the skull, and believe that the accuracy obtained by lifting up this membrane more than compensates for the supposed additional risk. I venture also to condemn or to belittle the practice of making a diagnosis of a tumor by penetrating with a needle through the unopened dura. Even after the membrane has been cut through, the help obtained by such a procedure is, I think, extremely small. A tumor too soft to be detected by the finger will not be recognized by the needle. Moreover, I can hardly consider the needle a perfectly safe instrument to use in the soft tissues of the brain, for in two instances it has come to my knowledge that a fatal hemorrhage has followed its use. Hence, after the exposure of the brain, if its surface be markedly bulging, which is always abnormal, or if by its loss of pulsation or by a marked change in color it does not indicate the presence of a tumor, solid or fluid, then the surgeon should, by gentle but firm pressure, palpate the bared convolutions, and he can even insinuate the pulp of his finger under the bony edge of the opening to a short distance with safety.

I have elsewhere (*Medical News*, April 16, 1887) stated that in regions traversed by important bloodvessels, as, for instance, the longitudinal and lateral sinuses, that after the skull above them had been gnawn away they can be lifted from their places and drawn aside without risk by pulling upon the dural flap, and in this way the median plane of the brain or the tentorium could be brought fairly into view. The attached base of the flap, I need hardly say, when near a sinus, should be toward the bloodvessels.

The objection that has been raised by Bergmann, and previously alluded to, against the attempt to remove large tumors of the brain,

because œdema of this organ would rapidly result from the sudden withdrawal of pressure, is neutralized by the generally conceded innocuousness of large cranial openings, whether produced by the surgeon or by accident. The permanent loss of protection, more hypothetical than real, that follows the taking away of a large portion of bone is, however, met by the replacement, at the termination of the operation, of the fragments of bone, which procedure was first taught us by MacEwen, of Glasgow, and which has been followed with only very moderate success by Horsley.

This end is much more satisfactorily accomplished by carefully preserving the disks of bone, removed by the trephine, in towels or cloths wet with an antiseptic solution of carbolic acid, 1 : 60, and kept warm during the operation by immersing the vessel containing them in warm water. They can, after the dura mater has been closed at the completion of the operation by sutures, be replaced and any gaps between them can be filled by the chopped-up fragments that may have been produced by the rongeur or chisel in further augmenting the size of the cranial aperture. In this way, I have, in one of two instances, replaced two buttons of a one inch trephine, and in the other, three buttons of the same size, and accomplished an almost complete bony closure of very large openings. In neither instance has any necrosis followed.

I had conceived myself original in this application, but have learned to appreciate more than ever the truth of the old adage, that "there is nothing new under the sun," since it has been brought to my attention that Clarke, of Glasgow, employed the same method in 1886. Its merit and ease of application, however, I must insist upon.

Hæmorrhage. Hæmorrhage from the bone itself may be troublesome and require the ordinary methods of pressure, or of plugging or, better still, of crushing the edges of the opening by blunt forceps to control it. Bleeding from vessels of the dura mater, for instance from the branches of the middle meningeal, may be controlled by catching them up with a tenaculum and tying the included vessels and membrane, a plan which was carried out in the case already presented. If the bleeding comes when the dura is divided, the open vessel can be caught with the cut edge of the dura, with the ordinary artery clamp and secured by a ligature. Vessels of the pia mater are easily torn and are oftentimes troublesome to secure, tearing readily under the traction of the forceps, even though delicately held. It is better to secure them by means of the tenaculum, and to tie the ligature with equal traction of its ends. If one is careful to incise or tear the pia where no vessels are to be seen, one can lift this membrane from the convolutions, and in this way obtain a clear field for further operative work. Any vessel of size in the brain substance itself or in the depths of the convolutions should be seized and secured, however far in it may be. The ligature may not,

however, always be practicable. In my first case of cerebral tumor, in which the hemorrhage, which recurred after being checked at first by pressure, was probably from a branch of the posterior cerebral artery, it would have been difficult, if not impossible, to place a ligature on it. It could, however, have been controlled by the use of a clamp which might have been left to project through an opening in the flap for a period of from twenty-four to forty-eight hours, and then safely disengaged.

For the removal of the tumor, it is often necessary to cut through a certain thickness of brain tissue. This is also the rule, I may state, in connection with cerebral abscess. In several of the cases, however, the tumor was superficial and presented itself to view upon the raising of the dural flap. When the tumor is not strictly superficial, it can, after being recognized by palpation, be reached by an incision, or by gently tearing through the cerebral tissue by means of the end of the finger or by a director. The handle of a spoon will serve then very satisfactorily to aid in its extraction, though my last experience with the use of Volkmann's blunted spoon, which was guided by the finger introduced to the tumor, was a very happy one. However, in using such a shaped instrument, the edges should be carefully rounded.

Drainage and closure of the wound. Drainage of a wound made in the extraction of a cerebral tumor is just as important as in any other wound. It has long been a recognized fact after injuries, but only recently, however, after the extraction of tumors, that the cavity left in the brain does not leave a permanent gap with vertical sides, but, as Horsley states, the floor of the pit bulges up in a very short time, even almost to a level with the surrounding cortex. In addition, the cut edges become slightly everted, and if less brain than bone is removed, they are extruded into the opening of the skull. After having ascertained that all hemorrhage is checked, and nothing but pressure and the ligature or the clamp should be used to accomplish this, the drainage is provided for best, in the use of a small, duly perforated rubber tube. This should emerge at the most dependent position of the wound and should reach the bottom of the cerebral cavity. It should be removed, according to Horsely, in twenty-four hours. But I have thought, as in operations elsewhere, that there is a little less risk of infection to the favorably progressing wound by the process of dressing, if the removal of this tube is left to the end of the second or third day. Especially do I so act in a case which is progressing favorably. The raised flap of dura mater is, after the insertion of the drainage tube, replaced and sewn together with fine catgut sutures. I have omitted to state that in cutting this flap it is well to keep from one-eighth (Horsley) to one-fourth of an inch, and preferably the latter distance, from the opening of the bone, otherwise there will be difficulty in applying the sutures when this

replacement is desired. The disks of bone and bone fragments are now put *in situ*, the wound finally bathed with the antiseptic solution and a few strands of horsehair or catgut placed among the bone fragments to emerge alongside the drainage tube, and then the flaps of scalp, after having first taken off the rubber hemostatic bandage encircling the head and securing whatever vessels may now bleed, is likewise replaced and duly sutured with catgut. Over all this a sublimate antiseptic dressing should be applied with iodoform dusted over the layer resting upon the wound. Finally, it is better to keep the head somewhat elevated for a few hours after the operation, which latter, it is needless to state, should be accomplished under the strictest antiseptic precautions throughout, even, to my mind, resorting to the protection of the spray, the efficacy of which cannot be doubted while its inconveniences must be admitted.

SOME REMARKS ON TONGUE CANCER, AND THE CHIEF OPERATIONS FOR ITS REMOVAL.

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WITH reference to two or three very practical points which rise up with every case of tongue cancer, it must be remembered that this is a form of cancer which is very frequent and is increasing in frequency;¹ one which attacks all ranks of life, which, after its early stages, is especially malignant,² and one in which, finally, an operation seems to be as much dreaded and deferred by men, as one for carcinoma *mammæ* is by women.

A PRE-CANCEROUS STAGE.³—However tongue cancer begins, it passes through a pre-cancerous stage—*i. e.*, a stage (the duration of which is unknown and varies extremely) in which inflammatory changes only are present, any ulcerative and other changes in the epithelium which may be present not amounting, as yet, to epithelioma, but on which epithelioma inevitably supervenes. The boundary line between this

¹ Amongst common cancers—*e. g.*, of breast, rectum, uterus, etc., cancer of the tongue stands about third, although so rare in women. Mr. Barker, in his carefully worked out article on Diseases of the Tongue (System of Surgery, vol. ii. pp. 57, 78), gives a series of tables showing that in the last thirty years there has been a steady increase from 2.6 to 11.5 per cent.

² This is shown in the following facts: (a) The rapidity here is quite different from other epitheliomata. Epithelioma, usually thought a slow cancer, here, in a moist warm cavity, much irritated, and never dry and warty, is terribly rapid. (b) Gland invasion is here not only certain, but inevitably early as well.

³ Mr. Hutchinson thus named this stage and pointed out its importance.

pre-cancerous stage and cancer is extremely narrow; the duration of this stage may be, and often is, extremely brief.

Aids in recognizing this stage are: (1) the duration of the ulcer; (2) its obstinacy to treatment; (3) the age of the patient; (4) absence of any duration or fixity; (5) careful scraping of surface of sore and microscopic examination.¹

In doubtful cases, after cleaning the surface, we should scrape lightly with a spatula or blunt knife and examine the result microscopically. In a sore not yet epitheliomatous, the epithelium is still regular, squamous, flattened, the nuclei small and single. In an ulcer becoming epitheliomatous, the cells are no longer regular, but variable in shape and size, oval caudate instead of square, with nuclei large and multiple. Not infrequently cell nests or fragments of cell nests may be found.

QUESTIONS ARISING BEFORE OPERATION.—The operating surgeon will often be called upon to give an answer to the two following questions: (A) Will the disease be permanently cured? (B) If a permanent cure is impossible, will life be bettered and prolonged?

(A) *Will the disease be permanently cured?* Really permanent cures are, as yet, too few—ten per cent. of cases operated on according to Barker,² or thirteen per cent. according to Butlin³—to afford a satisfactory reply.

The explanation of this is not altogether to the credit of our profession. Patients and we alike are too often both to blame. The gravity of the disease is overlooked, the time of the pre-cancerous stage is lost. Because tongue cancer is so often preceded by syphilis or local irritation, the practitioner diagnosticates the one or the other and suggests it as the essential part of the mischief. "Give drugs another chance"—*e. g.*, potassium iodide, potassium chlorate, mercury, caustics. To these there are, in nearly every case, the strongest objections in the pre-cancerous stage. Time is lost, strength is lost and the patient is lulled and befooled, while all the time the vascularity and irritation around the ulcer are increased. Furthermore, the patient is in part responsible for the delay, as he very naturally dreads the operation, exaggerating its danger, painfulness and the supposed inevitable loss of speech. These delays lead to "cultivation of cancer" and to miserable deaths.

We shall never be able to combat successfully these causes of delay until (1) the importance and value of the pre-cancerous stage are recognized. (2) Getting cases of tongue cancer early,⁴ we are enabled to

¹ Butlin (Sarcoma and Carcinoma, p. 154, Plate IV., Figs. 1, 2 and 3). The use of cocaine will, nowadays, facilitate the above examination.

² Loc. cit., p. 604.

³ Diseases of the Tongue, p. 295. Mr. Butlin's percentage is calculated from seventy cases. He is inclined to doubt whether a larger number of cases would afford so good a percentage of recoveries.

⁴ If ulceration has been persistent for longer than three months, permanent recovery is very doubtful. If it has persisted for over six months, if more than one-third of the tongue is invaded, if the floor of the mouth is involved, permanent recovery is well nigh certainly hopeless.

assure the patient that removal of one-half of the tongue will be sufficient, and that the other half can be safely and usefully spared to him. It has been denied by some that leaving half the tongue is attended by any good result. From an experience of twenty-two cases of removal of the tongue, I am able to say positively that a patient, in whom the tongue has been split longitudinally and half removed, has, in the half which is left, a member which most usefully represents the tongue, and over which the patient has, in spite of what is said to the contrary, most serviceable control.¹

(B) *If a permanent cure is impossible, will life be bettered and prolonged?* Cases which are not operated upon die within eighteen months, many in twelve months. An operation wisely planned and well carried out often gives a gain of six or eight months. This is a gain not only of time, but also of comfort. Death by glandular recurrence in the neck is less painful and noisome than death by mouth cancer. No one who has seen much of tongue cancer will have any difficulty in answering the question: which of the two is the more painful to the patient and distressing to those around him, tongue cancer, with its horrible fetor, profuse and foul salivation, its agonizing pain, its racking earache; or recurrence in the cervical glands, an alternative in which the patient is often able to work up to near the last and, until toward the close, is free from the agonizing tenderness, the stinking fetor, the dribbling of foul saliva and the slow starvation day by day of tongue cancer. When an operation is certainly attended with risk, the patient in facing it may be relieved by the assurance that a life prolonged in hideous misery and constant agony is worse than death following close upon an operation.

"When a man has only, suppose, two or three years to live, it is no small advantage if at least half the time can be spent in comfort rather than misery, and in profitable work rather than in painful idleness" (Paget). If a patient cannot make up his mind to an operation and is losing precious time, he should be warned, without being unduly frightened, of the state of things which will inevitably follow, alluded to a few lines above. Usually as soon as this sets in, as soon as the condition of the tongue renders him a nuisance to himself and others, with the disgusting fetor, the constant dribbling of foul saliva which cannot be swallowed, the weary aching day and night lit up into agonizing flashes when the parts are touched or moved, the patient becomes willing to run any risk. But too often by this time not only are the glands already enlarged, but the mischief has reached the floor of the mouth or the alveolar mucous membrane by extension, though not yet, perhaps, with ulceration.

¹ In a patient from whom I removed half the tongue two and one-half years ago, the hypertrophy of the remaining half is very marked and the speech excellent.

OPERATIONS.—The following four will be considered here as giving a choice which will meet all cases, viz.: 1. Whitehead's. 2. Symes's. 3. Kocher's. 4. Écraseur.

With these certain aids—*e. g.*, slitting the cheek, preliminary laryngotomy and ligature of the linguals, will also be considered. One or two other methods will then be briefly alluded to.

While the above operations, and I allude especially to the first three, give a choice which will enable the surgeon to meet any case of tongue cancer, whichever is chosen must be completely carried out; "niggling" operations lead inevitably to return and accelerated growth in the tongue itself.

1. WHITEHEAD'S METHOD.

The advantages of this are very great. They are:

A. The transverse section of the body of the tongue can be placed deliberately well behind the growth. However far behind the growth the loop of the écraseur is placed before the operation and however securely it seems to be retained *in situ* by large curved needles, as the loop is tightened, owing to the enormous strain which is gradually applied, the needles and the loop are forced forward nearer and nearer to the growth. Now the neighborhood of this is all ready to become the seat of malignancy. All around the growth the epithelial columns are ready to dip down into the vascular connective tissue beneath, on which, in health, they never encroach. Again, the parts around are loaded with inflammatory cells, soft and vascular. If, as is very likely, owing to the tremendous tension to which it is submitted, especially when the parts are very soft, the loop comes crushing into this neighborhood and makes the section here, the indipping processes, which extend for some distance around the actual epithelioma, may, owing to the vascularity and inflammation consequent on the operation, break out into speedy recurrence. Again, the insertion of the needles, which are intended to keep the loop well behind the growth, is not always an easy matter, especially if the growth is far back and if the front teeth are well developed, whilst the molars and premolars are too deficient to allow of wide opening of the mouth with a gag.

B. The resulting wound is very clean, there being very little laceration and no charring. The slight decomposition which may take place from an extensive operation, even with scissors, is readily checked by the use of iodoform and ether. The advantage of this, in saving a patient whose vitality is already lowered from the depressing effects of being liable for days to breathe and swallow with a fetid sore in his mouth, in securing rapid granulation and healing and thus enabling the patient to be early propped up and soon to leave his bed, must be obvious to every surgeon who knows how great the risk is of fatal septic

bronchitis in these cases. For the same reason secondary hemorrhage is unknown.

C. The instruments required are extremely simple and few, as will be seen from the account of the operation.

The Operation. It is most essential that the anæsthetic should be in the hands of a man who can be thoroughly trusted. It is often taken badly in these cases, with much dyspnœa and restlessness at first and during the operation; owing to the open mouth admitting much air and the fear of interfering with the operation, the patient often "comes to." The only thing is to get the patient well under at first; later on it will be well not to keep him too much under the influence of the anæsthetic, in order that, the sensibility of the larynx being retained, the blood may not enter the air-passages. The administrator must watch the tint of the lips, the condition of the veins in the cheeks, and should know when a little blood is only safely, though noisily, bubbling at the back of the fauces and when it is getting into the trachea. I look upon the administrator of anæsthetics, in these cases, as quite as important as the operator. Two reliable assistants who understand the steps of the operation are needed, one to take the gag in charge and to sponge when needed and the other to hook back the corner of the mouth with two fingers while he is ready to sponge and thus, with the position of the head over to this side, with the aid of deft sponging, enable the blood to escape freely from the wound into the cheek and out of the mouth. Two nurses should be ready to supply sponges; these being absolutely clean, soft and thoroughly wrung out of iced Condry's fluid and firmly secured on holders. The following instruments should be close to the operator's right hand: scissors, a pair of torsion forceps and Spencer Wells's forceps, a needle in handle, threaded with stout silk and one or two medium-sized ligatures of carbolized silk.¹

A good light is absolutely essential; daylight, with the operator close to a window, being the best. If it is needful to operate when this cannot be obtained, as in a succession of foggy November afternoons, a good lamp light concentrated by a laryngeal mirror will be useful. In making arrangements for a good light, the surgeon will remember that, while the removal itself takes but a short time, getting the patient under the anæsthetic and keeping him under its influence often render the operation much prolonged. It may not be superfluous to add here that this is an operation which calls for coolness and decision on the part of the operator and for promptness with their help on the part of all those who assist. No crowding on the operator, no obstruction to the light by bystanders should be permitted for a moment.

¹ Mr. Whitehead, hearing that I had twice operated by his method, in 1881, kindly sent me a pair of his scissors. They are rather longer than the ordinary scissors, perfectly flat, very sharp up to the tips, which are square and blunted.

Preliminary laryngotomy. The question of the advisability of this operation now arises. It forms no part of a "Whitehead" proper. The operator who introduced the scissors-method, and whose success with it is so well known, never, I believe, uses a preliminary laryngotomy. In my first six cases I followed him closely. In the later sixteen I performed laryngotomy on several occasions, though I fear Mr. Whitehead will consider this admission on my part as a sign of "falling away." With a wider experience, I am led to think very lightly of this preliminary step, and of the plugging at the back of the mouth, which it renders safe; and I do so for this reason: with the fauces plugged and the patient breathing through a laryngotomy canula, the surgeon can neglect the hemorrhage more, can operate more deliberately and thus (and this is the value of this preliminary step in my mind), at every step of the operation, can have the parts more thoroughly sponged dry and thus be enabled throughout to keep more surely wide of the disease. In other words, I do not dread the hemorrhage which accompanies a scissors-operation for itself, but because it is liable, in spite of careful, prompt sponging, to obscure the field and thus lead to cutting dangerously near the growth, a danger especially likely to happen if the hemorrhage is at all free, if the parts cut are very much softened and if the patient is not taking the anæsthetic well.

For these reasons I am inclined to recommend a preliminary laryngotomy, with plugging of the fauces in these cases: 1. When a surgeon who values Whitehead's operation is doubtful as to his means of meeting hemorrhage. 2. When the growth extends beyond the middle of the tongue into the posterior third. 3. When the floor of the mouth is at all involved. In growths limited to the anterior half of the tongue, unless there is much fixity, laryngotomy is not needed, for, as will be subsequently seen, sufficient of the tongue in such cases, after very little use of the scissors, comes right out of the mouth.

If it is decided to perform laryngotomy, this operation is done and a soft clean sponge, dusted with iodoform, is tied with silk into appropriate size and fixed at the back of the fauces, the silk being brought out of the mouth and held by a finger of the assistant who has charge of the gag. This sponge must be pressed well back and care taken that it does not draw back and down the base of the tongue, or it may cause some difficulty in securing the linguals when the transverse section of the tongue is made far back. The anæsthetic is now given through the tube, an additional advantage brought about by the laryngotomy, as the administration of the anæsthetic does not interfere with the field of operation. So very little sloughing and swelling of parts follow on Mr. Whitehead's operation that the laryngotomy tube may be removed as soon as the patient is back in bed and has "come to" comfortably.

Whether laryngotomy is performed or not, the patient, being propped

up, is brought quite to that side of the table on which the surgeon stands. A gag¹ is placed on the side of the mouth opposite to the growth and the mouth widely opened. The tongue is then transfixed on the diseased side, well back in its anterior third, with a needle in a handle loaded with stout silk; this is looped and knotted and the tongue thus well drawn out of the mouth. The surgeon then, with a sharp-pointed bistoury, splits the tongue longitudinally along the raphe to a point thoroughly well behind the growth. This is another departure from a strictly performed "Whitehead," but it has the following advantages, while it causes no troublesome hemorrhage if the blade be kept in the middle line: 1. If the whole tongue is to be removed, it places the hemorrhage much more under the control of the surgeon, as he can deal with each half separately and with one lingual securely at a time. 2. It enables the surgeon to leave half the tongue if he finds it safe to do so. It has been said that leaving half the tongue is useless, the part left being but little under the patient's control. I am of an opinion entirely different. In cases in which I have been able, after splitting the tongue, to leave half of it, the part was most useful both in speaking and swallowing, etc.,² and I am, further, most strongly of opinion that if patients could be assured that only half of the tongue would be removed, they would submit much more readily to an operation they dread so peculiarly and to the grievous putting off of which is due the very small percentage of permanent cures.

The tongue having been split and the diseased half drawn well out of the mouth, the surgeon next divides with scissors the mucous membrane between the tongue and the alveolar process, keeping close to the bone, so as to be wide of the disease. The anterior pillar of the fauces is next divided. While the above steps are taken, the two assistants sedulously sponge away any hemorrhage into the hollow of the cheek and out of the mouth, the cheek being retracted as already directed. Careful sponging and sponge pressure on bleeding points are most essential if the surgeon is to cut wide of the disease.

If the disease has implicated the frænum and its vicinity, two or three of the lower incisions should be made, so that the scissors may be introduced on a level with the disease. If this is not done, the scissors have to be dipped in over the teeth in an awkward way and one which, as soon as the bleeding occurs, makes it impossible to be sure of getting below the disease. The scissors can be introduced with much greater facility and used to much better purpose, if a gag is made in the teeth;

¹ Of these I prefer Krohne & Seseman's modification of Mason's gag, as the best all 'round instruments. It was first brought to my notice by Dr. Hewitt, who has found it the readiest and most efficient in case of need in the administration of anesthetics. Mr. Gowan's gag is also a good one, but I have found it slip occasionally in spite of its ingenious mechanism. We still need a gag suited to edentulous jaws.

² See foot note 4 on page 231.

these can be kept and fitted to a plate later on by a dentist. When half of the tongue has been freed all round, the muscles between it and the floor of the mouth are cut through with a series of short snips, until the diseased half is separated on the level of the lower part of the jaw, as far back as is needful. During this stage, oozing will take place and one or two small arteries will jet with varying freedom in different cases, but these will yield to pulling steadily on the tongue and to firmly applied sponge pressure.

The tongue having been freed horizontally up to a point well behind the disease, the transverse section is now made, and here I have found the following precautions useful. Instead of cutting straight across the half and trusting to being able to rescue the lingual on the face of the stump, a step by no means always easy of accomplishment, owing to the artery being often at once obscured by a small pool of blood and to the not infrequent softness of the tissues in these cases, I cut a deep groove through the tough mucous membrane of the tongue and tear through the softer muscular tissue with the closed scissors or a steel director, until the lingual nerve and artery are seen; then, having applied a long-bladed pair of torsion forceps to the remaining tissues, cut away the half of the tongue in front of the forceps and then twist or tie the lingual artery which has thus been secured.¹

If it be needful, the surgeon then proceeds to deal with the other half of the tongue, a step which is much facilitated by the room given for manipulation by the removal of the first part.

Slitting the cheek. This step is an excellent one. It may be made use of in cases in which the disease is situated very far back, extending close to or on the anterior pillar of the fauces, in which the hemorrhage is expected to be especially free, in which the light is unavoidably very bad or in which there is unusual difficulty in getting the jaws well apart. The cheek is slit as far back as the anterior border of the masseter, the facial artery and other small branches being secured at once. The parts require most careful adjusting afterward, especially at the corner of the mouth, where, from the dribbling of saliva, primary and exact union is not always secured.

Preliminary ligature of the linguals. This step has been very largely practised by Dr. P. Billroth.² Unfortunately, he expresses no opinion as to its value. He states that he ligatured the artery twenty-seven times (apparently in all as a preliminary step), but only adds that no secondary hemorrhage ever followed and that the wound always healed satisfactorily.

¹ If any difficulty occur in dealing with a divided lingual, especially if the tongue has been divided far back, a suggestion of Mr. Heath's will be found most useful, viz., to hook one or two fingers into the pharynx over the stump of the tongue and to draw this forward, thus at once arresting the hemorrhage by pressure and bringing into view the bleeding point.

² Clinical Surgery, Syd. Soc. translation by Mr. Dent, p. 113.

Dr. Shepherd, of Montreal, has recorded¹ three cases in which he tied both linguals previously to excision of the tongue, which operation was bloodless.

I have never taken this precaution myself and I do not recommend it for the following reasons: (1) In three cases in which I know of this precaution having been taken, the hemorrhage was as free as in the usual operation with scissors performed without any such preliminary.² (2) I think that an experience derived from operations in twenty-two cases justifies me in saying that if the operation with the scissors be performed with attention to the details given above, the hemorrhage is not so difficult to deal with as to require this precaution.³ (3) The ligature of both linguals is by no means an operation that can be done quickly and is one that requires a good light. It may thus take up a good deal of the time required for dealing with the disease of the tongue itself. If it be answered that diseased glands can be dealt with at the same time and by the same incisions, I must state, in no contradictory spirit, that I am of a distinctly contrary opinion. Removal of the epitheliomatous glands requires of itself much time and painstaking, lying, as they do, in long chains and in relation with most important structures. If they are to be removed with that thoroughness which alone justifies any attack on them, this should be done with the full allowance of time and the undivided attention which are given by a separate operation, either before or after that on the tongue.

2. SYMES'S OPERATION.

This consists in dividing the symphysis menti and then removing the whole tongue and floor of the mouth with knife or scissors, or partly with one of these and partly with the *écraseur*. It is a far more serious⁴ operation than the one already described, and often involves prolonged after-treatment, owing to the tardy union of the jaw. It should be reserved for those cases in which the ulcer involves the floor of the mouth or in which, in addition to an ulcer on the side, a hard mass of infiltration can be felt in the substance of the organ. When this operation is contemplated in an aged or broken-down patient, every attempt should be made to improve the general health previously. An

¹ *Annals of Surgery*, November, 1885. Mr. Treves (*Lancet*, April 29, 1883) publishes four cases of removal of the tongue, in which ligature of the linguals was resorted to. The hemorrhage which followed the operation on the tongue is stated to have been "very insignificant and usually immediately arrested by firm pressure with a sponge; it is only far back in the region of the tonsil that any bleeding may occur that does not cease almost spontaneously."

² The operations were here performed by two of my colleagues, and there could be no doubt that the vessels were secured.

³ In writing this I am taking it for granted that the surgeon will be aided by helpers as apt and ready as I have been fortunate enough to find.

⁴ *Lancet*, 1858, vol. i. p. 46, and ii. p. 163. See also the account of Dr. Fiddes of his case, *Edinb. Med. Journ.*, vol. iv. p. 1092. As a proof of the severity of this operation, both of Professor Symes's first two patients died.

anæsthetic being given and a preliminary laryngotomy performed, the patient's head and shoulders are raised and the surgeon divides the soft parts of the chin as far down as the hyoid bone, if the soft parts in the floor of the mouth are much implicated. The vessels being secured, the jaw is drilled below the teeth a quarter of an inch on either side of the middle line and then sawn through.¹ A sponge is now placed at the back of the fauces and, the halves of the jaw being forcibly retracted, the tongue is well drawn out by a loop of silk, the mucous membrane snipped through between the tongue and the alveolar process and the anterior pillar cut through. The genio-hyo-glossi and genio-hyoids are next divided,² and the tissues in the floor of the mouth separated as deeply as necessary with the scissors or blunt-pointed bistoury aided by the finger, partly by cutting, partly by tearing, any vessels that require it being tied or twisted. The tongue being thus freed laterally and below as far back as is needful, the transverse section is made one-half at a time, with the precaution already recommended.

The floor is now carefully inspected and any suspicious patches or enlarged glands most carefully removed. In raising the former before using the scissors, a tenaculum is often very useful. If it be preferred, though I in no way recommend it, as soon as the attachments of the tongue to the floor and sides of the mouth are sufficiently divided, the transverse section can be made with an *écraseur*, the loop of which is slipped over the tongue and kept in position by two curved needles.

The two halves of the jaw can then be wired, but to promote speedy union a cap of vulcanite or silver had best be fitted on to prevent displacement of the fragments. A drainage tube should be brought through from the mouth to a point just above the hyoid bone, before the soft parts are united with sutures. In some cases it may be needful to secure the stump of the tongue forward by a loop of silk fastened to the cheek by strapping.

3. KOCHER'S³ METHOD BY LATERAL INFRA-MAXILLARY INCISION.

This operation, like the last, is a severe one; it also opens up freely the connective tissue of the neck. It has the great advantage of enabling the surgeon to deal with mischief far back in the tongue and at the same time of removing enlarged submaxillary glands. Furthermore, it can be performed antiseptically. The mouth being disinfected with

¹ By some it is advised to saw this somewhat angularly instead of vertically, to promote interlocking and union of the fragments; as, however, necrosis may follow this as well as the other form of bone-section, the longer time that it entails is scarcely worth giving.

² If only one-half of the tongue need removal (a rare contingency in cases which call for this operation), the complete separation of these muscles and the consequent danger of the falling back of the tongue will alike be avoided.

³ *Deut. Zeitsch. f. Chir.*, Bd. xiii, 1880. Mr Barker was the first, I believe, to draw the attention of English surgeons to this operation (*Diseases of the Tongue. System of Surgery*, vol. ii.).

1 in 1000 perchloride of mercury solution and a preliminary laryngotomy performed, an incision is made from just below the symphysis down to the hyoid bone, following the digastric muscle back to the anterior edge of the sterno-mastoid and then up to near the lobule of the ear. The flap thus marked out of the platysma and fasciæ is then turned up and the facial artery tied. The submaxillary region is then thoroughly cleaned out and the lingual artery secured on the hyoglossus. By cutting through the mylo-hyoid muscle, the cavity is now opened into and the tongue brought out through the wound and divided as far back as is needful, one-half being removed after splitting the organ, or the whole tongue removed, the opposite lingual being tied in the neck if needed.

The large wound is then carefully packed with strips of antiseptic gauze, a drainage tube being first inserted. The patient continues to breathe through the laryngotomy tube until the wound and mouth are quite sweet and thus the risk of septic broncho-pneumonia is lessened.

If it be desired to conduct the operation as strictly antiseptically as possible, before it is begun plugs of salicylic wool must be placed in the nose, the cavity of the mouth well washed out with 1 : 2000 mercury perchloride solution and the spray used at the operation and at each dressing. As, however, it is impossible to render aseptic the closely contiguous cavities of the posterior nares and pharynx and as the patient will require feeding at regular intervals with a nasal tube, the writer would prefer to trust to sufficiently frequent changes of the gauze with which the wound is plugged, dusting on iodoform and powdered boric acid, painting on with a camel's-hair brush iodoform and ether and securing free drainage by a tube which has one end brought out of the mouth and the other at the lower and posterior angle of the wound, both lodged in aseptic dressings.

4. THE ÉCRASEUR.

This may be used in different ways; the two following are the chief ones:

(1) Through the mouth in combination with scissors, a method used by Mr. M. Baker.¹

(2) By means of a puncture in the submaxillary region or through a wound which has to be made here in the removal of enlarged glands.

If the écraseur has to be made use of, the first method is by far the simplest and speediest way of using it. In addition to the instruments already given in the description of the operation with scissors, the surgeon must be provided with a stout, short écraseur, curved on the flat, working smoothly and carrying a strong loop of whip cord.²

¹ Lancet, April 10, 1880. Dictionary of Surgery, vol. ii.

² Not of wire See the next footnote.

The first part of the operation is much like that already given. The tongue being well drawn out with a silk loop, the anterior pillar and the mucous membrane between the alveolar margin and the tongue being cut through, the tongue is then split with a bistoury along the raphé as far back as it is needful and its attachments to the floor of the mouth partly snipped through with scissors, partly torn with the finger. The tongue being now freed sufficiently to make the transverse division, two slightly curved needles in handles are made to perforate the tongue a full inch behind the posterior limit of the disease and the loop is then slipped on and adjusted behind the needles. Before doing this, the writer would strongly urge the recommendation already given, that a groove be cut with the scissors through the mucous membrane of the dorsum and sides of the tongue. This simple step will serve to steady the bite of the *écraseur* and lessen the risk of its gradually coming, as it is tightened, dangerously near the growth, and it will also shorten the time that the loop takes to effect its work. When first adjusted, the *écraseur* may be worked more quickly, but as soon as real resistance is felt, the screw must be turned more slowly, a half or three-quarters turn being made every minute, or at longer intervals if the loop seems to be cutting too quickly. It should always be remembered that if oozing takes place from hurried use of the *écraseur*, it will be for more difficult to arrest on a surface bruised by this instrument than on one cleanly cut by scissors.¹ If the whole tongue is removed, the *écraseur* should always be applied to each half separately. Making the transverse section across the whole tongue at once is most tedious, and the great strain is likely to be too much for the loop or instrument itself. It also causes the constricted tongue to swell into a large livid mass which much obstructs the breathing, and, if as is likely, both the linguals, which are left to the last, are divided simultaneously, the furious spirting of these vessels in two crossing streams is most embarrassing.

I do not recommend the use of the *écraseur* for these reasons :

(1) However well behind the disease the loop is placed (a step by no means easy to secure when the disease is situated far back), as it is slowly tightened it tends to come forward (even when a groove has been cut in the mucous membrane), gradually grinding the needles placed to keep it in position and the loop closer and closer upon the diseased area ; or, if not actually into this, into one from its close contiguity ready to take on disease.

¹ Mr. Butlin (*Disease of the Tongue*, p. 334) gives the following case : "The only instance of death from hemorrhage in my table occurred in the case of a man whose tongue was removed with a strong wire *écraseur*, which cut through the tissue of the tongue like a knife, much more quickly and cleanly than had been intended. There was some smart hemorrhage at the time, and it was not easy to get the man out of the operating theatre alive. The artery was not thoroughly secured, the bleeding recurred and the patient sank and died a few hours later.

(2) The writer has seen again and again, however carefully the tightening of the loop has been managed, that this is, finally, not fine enough to divide the lingual artery, which is dragged out in the eye of the loop; it has, after all, to be secured by ligature or torsion, often not without previous furious bleeding.

The galvanic *écraseur* has not been described. I mention it here only to condemn it. During the operation the loop may break, or it may cut its way too rapidly through softened tissues, especially if the heat used is too great. Later on, the patient has still to run the gauntlet of the risks of septic lung-trouble and secondary hemorrhage, which the use of this treacherous instrument entails.

AFTER-TREATMENT.—The chief objects here are: (1) To keep the wound sweet. (2) To give sufficient food. Several English surgeons have lately drawn attention to Kocher's method already alluded to, of packing the wound with antiseptic gauze and bringing a drainage tube out into the submaxillary region. Mr. Butlin gives with especial care the details with which this method has been employed by Kocher himself, who lost only one patient from the operation in fourteen cases, and by Billroth, whose results, published by Wolffler, show the last seventeen cases thus treated all to have been successful. I have not myself made use of this method for these reasons: (1) I consider that other means, especially that of Whitehead, give as good results and in a way more agreeable to the patient, and I may add here that, out of twenty-two cases of Whitehead's operation, I have lost only one from the operation.¹ (2) That this method of packing with gauze does not and cannot give absolutely reliable aseptic results. It would, I think, be easy to prove this from the constant soaking of saliva and other matters, in which this wound differs from others; but no better proof can be given than the fact that a patient in whom Mr. Butlin himself made trial of this method died, on the eighth day, of septic pneumonia.

The treatment I have made use of is as follows: For some days before the operation I make the patient practise² frequently washing out his mouth with Condy's fluid, sitting up, with the head alternately dependent on either side. He also gets used to feeding himself with a drainage tube attached to a feeder spout, and passed by himself to the back of his throat.³ After the operation, the cut surface is brushed over with a solution of zinc chloride, gr. x-5;⁴ or of iodoform in ether; of the

¹ The patient here was a Jew, prematurely aged, with epithelioma supervening on syphilis, who died of broncho-pneumonia on the eighth day. I fear that this was septic, though my colleague, Dr. Mahomed, who saw the patient during life and made the post-mortem examination, was of a different opinion, being chiefly influenced by the sweet condition of the mouth.

² This gives him something to occupy his mind and cleanses the mouth.

³ If the patient is at all intelligent, he will do this for himself far more painlessly than an assistant can.

⁴ No stronger solution should be used, for fear of causing cellulitis in the submaxillary regions.

two, I prefer the former at this time. Morphia is given as freely as is safe, with ice to suck, and, if the patient's condition is low, milk and brandy are administered, either by a soft œsophageal tube or by enemata; but I have generally found that, after the first six hours, a patient, previously practised in the matter, will give himself sufficient food.¹

After the patient has had his first sleep, the surface is brushed over every two or three hours, at first with iodoform and ether, and the patient is soon encouraged to sit up and wash out his mouth constantly with Condy's fluid. He should be kept warm and free from draughts and either propped up or turned on either side. I try to have my patients sit up a little on the second day, if possible, and get them up, when this is feasible, into an arm-chair, by the fifth or sixth day. Yolks of eggs, arrowroot, soups, pulped vegetables in broths and the like are soon added to the milk and brandy.

CAUSES OF FAILURE.—1. Broncho-pneumonia, pneumonia, abscess and gangrene of the lungs. These must be placed first on account of their frequency. Septic in their nature and due to the patient's breathing foul gases and drawing down putrid fluids into his lungs, their treatment must be preventive, every endeavor being made to keep the mouth sweet and to relieve the patient's breathing, by attention to the details already given.

2. Hemorrhage. This is rarely met with at the time of the operation or soon after, if every spiriting artery has been properly secured. It will also be rarely met with as a secondary complication, if the wound has been kept sweet. In cases of bleeding, if the application of a silk ligature to the bleeding point, taken up by a Spencer Well's forceps or a tenaculum, is impossible, firm pressure with a sponge on a holder should be made use of after all clots have been removed. If the wound is foul, it should be cleansed by brushing it over with iodoform and ether or with turpentine and should be lightly plugged with strips of gauze wrung out of the latter, which is a most powerfully cleansing styptic² and one always to be used in preference to perchloride of iron. If all the above fail, either applying and leaving *in situ* a pair of Spencer Wells's forceps, packed around with soft gauze, or ligature of the lingual as far back as possible must be resorted to.³

3. Cellulitis; erysipelas. 4. Pyæmia. 5. Exhaustion, more rarely shock. 6. Œdema of the glottis. 7. Suffocation from falling back of the tongue. 8. Recurrence. This last and most important cause of failure I purpose to consider in another communication.

¹ If this is not the case, a soft tube must be passed.

² I have learned the value of this in sloughing wounds from Mr. Banks. Clinical Surgical Notes, p. 162.

³ If the bleeding is of the nature of oozing, one or two injections of ergotin should certainly be used.

ASTHMA,

WITH AN ANALYSIS OF EIGHTY CASES, WITH ESPECIAL REFERENCE TO
ITS RELATION TO LOCAL DISEASES OF THE UPPER AIR TRACT.

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IN reviewing the literature of asthma, at the present day, when our knowledge of this disease has become systematized and definite, one is particularly struck with the exceedingly vague and indefinite views which have prevailed in regard to it up to comparatively recent times, and particularly with the curious theories which have been advanced to account for the symptoms which characterize it; for, while ancient observers could not fail to have their attention prominently attracted to it by the peculiar character of its manifestations, yet I find that it is rather as a symptom than as a disease, that most writers deal with it. Even as late as 1874, we find Bennett¹ devoting only a few lines to its consideration as a symptom of emphysema and bronchitis, rather than as a distinct disease, while Watson, in his classical work on the *Practice of Physic*, although devoting a chapter to the subject, makes the somewhat *naïve* confession that he has never listened to a case by auscultation. As early, however, as 1852, we find careful observers searching for some rational explanation of the peculiar symptoms which characterize this curious affection. As far as we know, Bergson² was the first to make it a distinct disease, although its individuality was denied by Rostan³ and by Beau.⁴

The ancients believed the disease to be due to spasmodic contraction of the bronchial tubes. This view was, however, controverted by Laennec, who cites, as an argument, those cases of asthma in which we have puerile breathing over the entire chest, thus showing that the capacity of the lungs may be increased during a paroxysm rather than diminished. Copeland calls the same cases nervous asthma, while Walshe suggests the term hæmic asthma. Dr. Bree takes a different view, believing the disease due to some specific irritant in the air tubes and that the asthmatic paroxysm is an effort to expel these so-called irritating humors.

Beau,⁵ whose treatise has already been referred to, believes that all cases develop from a primary bronchitis.

Todd⁶ regards the disease as humoral, comparing it to gout or rheuma-

¹ Principles and Practice of Medicine. American edition. Philadelphia, 1874.

² Recherches sur l'asthme, 1852.

³ De l'asthme; Gaz. des hôpitaux, No. 31, 1856.

⁴ Traité Clinique et pratique de l'auscultation. Paris, 1856.

⁵ Arch. Générale, vol. 78, p. 155.

⁶ Medical Gazette, 1850.

tism, and believes the *materies morbi* affects the respiratory centre; while Budd¹ divides it into two forms; one depending upon cardiac disease, emphysema, etc., the second form due to a spasm of the respiratory muscles. The mere fact that an attack of asthma is always preceded by a feeling of a want of air and increased respiratory effort is enough to controvert this view. That this view has been held, though, for some time, is shown by the fact that so recent an author as Wintrich¹ advances essentially the same idea.

The first to write a really exhaustive work on asthma was Henry Hyde Salter.⁵ His work has become a standard one, and his views have been adopted by most subsequent writers on general medicine. He makes the following propositions:

First. Asthma is essentially, perhaps with the exception of a single class of cases, a nervous disease, the nerve centres being the seat of the essential pathological condition. *Second.* The phenomena of asthma, distressing sensation and demand for extraordinary respiratory efforts, immediately depend upon spasmodic contraction of the cells of unstriated muscular fibre in the bronchial tubes. *Third.* The phenomena are excito-motor or reflex actions. *Fourth.* The extent to which the nervous system is involved differs much in different cases, being, in some, restricted to the nervous apparatus of the air-passages themselves. *Fifth.* In a large number of cases, the pneumogastric, both gastric and pulmonary portions, is the seat of the disease. *Sixth.* In a large class of cases the nervous circuit involves other nerves beside the pneumogastric. *Seventh.* There is still another class of cases in which the irritation is central. *Eighth.* In a certain proportion of cases the irritation is humoral.

We find here that the bronchial spasm-theory of the ancients was fully adopted as the result of large clinical observation and study, and maintained by Salter in the several editions of his popular work. This theory is the one adopted by Biermer.⁴

We see, then, that, according to Salter, asthma is essentially a neurotic disease, and this theory, with some modifications, is the one adopted at the present day. Dr. Burney Yeo⁵ attempts to draw an analogy between the extreme distention of the lungs in asthma and abdominal distention in hysteria. This observation is curious perhaps, but scarcely harmonizes with clinical observation. Morton⁶ draws a similar analogy between asthma and spasmodic croup. The sudden nightly attacks, with daily remissions; a certain periodicity observed in the attacks of both dis-

¹ Med. Chir. Transactions, vol. 23. London, 1840.

² Virchow's Handbuch der Path. und Ther., Bd. v. Ab. 1.

³ On Asthma; Its Pathology and Treatment. London, 1860.

⁴ Ueber bronchial Asthma, Sammlung klinische Vorträge, 1876.

⁵ London Practitioner, 1881.

⁶ British Medical Journal, January 22, 1877.

eases; a dry first stage and moist second stage; all seem to him to point to a certain similarity between the two diseases. Another curious observation which he makes is that the tendency to asthma begins at about the time when the tendency to spasmodic croup ceases. He believes that both croup and asthma are due to disorders of innervation of the larynx, on the one hand, and of the bronchial tubes, on the other, the immediate cause of the paroxysm being excess of venous blood in the medulla. This observation is also incorrect by the decided error in both premises.

In the diligent research after the hidden causes of disease so characteristic of the present day, Leyden¹ claims to have discovered certain elements in the sputa of asthmatics, known as "Leyden's crystals," and misnamed, for some reason, Charcot's crystals.

Ungar, of Bonn, in an investigation of thirty-nine cases of spasmodic asthma, as recently as 1882, found these crystals in the sputa, but also found that they increased in number the longer the sputa stood, thus, to a certain extent, vitiating Leyden's theory.

Quite recently, Dr. Pfuhl² relates the case of a soldier whose sputa contained large numbers of the crystals of Leyden, without any evidence of asthma. Further, he has examined the sputa in 855 cases of pulmonary disease, and has only found the crystals in the one case mentioned above. An attack of asthma, as we know, consists in the occurrence of more or less well marked symptoms of oppression of breathing, with a certain amount of periodicity, coming on suddenly, generally at night, and lasting for several hours, the dyspnoea obtaining both during inspiration and expiration, while the cessation of the attack is accompanied by a more or less profuse serous and sero-mucous expectoration. This series of phenomena has been explained by the writers quoted above on the theory that this dyspnoea is due to the contraction of certain muscular fibres, which anatomists have demonstrated as existing in the bronchial tubes, down to their smallest ramifications. It is difficult to understand why the early writers did not vigorously question this conclusion as failing to explain rationally the phenomena of a paroxysm of asthma. The only explanation of this is that their knowledge of pathological processes was unequal to supplying a more plausible theory.

In 1872, however, we find the spasm-theory called in question, and what, to my mind, is a far more plausible one advanced by Weber,³ who was the first to teach us that the cause of the paroxysm lay in a paresis of the vasomotor nerves presiding over the vessels of the bronchial mucous membrane. Under the influence of this vasomotor paralysis,

¹ Virchow's Arch., Bd. 54, 1871.

² Deutsche med. Zeitung, 1887, No. 76.

³ Tageblatt der 45te Naturversammlung zu Leipzig, page 159, 1872.

there occurs, from some cause, a sudden letting up of the control which is exercised over the calibre of the bloodvessels, whereby they become distended to such an extent as markedly to interfere with the passage of air through the bronchial tubes. This paralytic condition having lasted several hours, the membrane maintaining a dry condition, as is always the case in the first stage of the inflammatory processes, there follows an escape of serum and sero-mucus, thus relieving the engorged bloodvessels, which soon regain their normal calibre, coincident with the cessation of the paroxysm. We thus have a thoroughly rational and plausible theory in explanation of the symptoms of spasmodic asthma. As to the causes, however, of the disease, little has been said further than the causes already stated, as laid down by Salter. Weber's paper, however, was followed by a series of clinical observations which largely lent weight to his theory and also threw much light on the causes of the disease. The first observation of note in this connection was that of Voltolini,¹ who reported a case of asthma, due to the existence of nasal polypi, as shown by the fact that the asthma promptly disappeared on the removal of the nasal growths. This observation was followed by a large number of similar reports by Hanisch, Porter, Daly, Todd, Spencer and others, as noted by Mackenzie,² and gave rise to voluminous discussions by Shafer, Fränkel Bresgen, Hack and others, not only on asthma as a reflex disease due to nasal polypi, but also as due to other nasal disorders.

As before stated, the literature of this subject has assumed large and voluminous proportions, but it still inclines itself to the subject of asthma as a reflex disease. Now, I do not propose to enter into this subject of reflexes, which has always seemed to me as a term oftentimes used as a cloak to conceal our ignorance of the direct relation between cause and effect, but I am convinced that, in very many instances of morbid symptoms occurring as a result of reflex disturbance, we can offer a more rational explanation than "reflex," in the sense in which the term reflex is so often used at the present day. Following Voltolini's observations that nasal polypus was the cause of asthma, and intimately connected with the same line of investigation, came the study of hay-fever. The first impetus, as I think, to this line of investigation, was a paper by Daly.³

Up to this date, hay-fever had been regarded as simply a periodical coryza or influenza, in which the paroxysms were characterized by the same symptoms as are met with in an ordinary cold in the head. As a matter of fact, however, acute rhinitis and an attack of hay-fever differ in a marked way, in many respects. This fact was soon recognized, and

¹ Die Anwendung d. Galvanokaustik. Wien, 1872, p. 246, 4th ed.

² Diseases of the Throat and Nose. American edition, vol. ii. Philadelphia, 1884, p. 337.

³ Archives of Laryngology, vol. iii. p. 157.

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a new name was given to hay-fever, *vasomotor rhinitis*. We have, thus, suggested a connection between the two diseases, and, as a clinical fact, the two diseases are intimately connected; for, as we know, a large number of hay-fever patients suffer from asthma, following soon after the onset of their nasal symptoms. A natural division of cases of asthma into *hay-asthma* and *perennial asthma* is thus made, the one term being applied to those cases that are attended with hay-fever, the other to those cases in which asthma occurs without reference to seasons and without the preceding influenza. The question now arises, What, if any, connection exists between the two, or how far are these two diseases one and the same; and, again, what is the connection between hay-fever and asthma, and are they not, in many respects, the same disease? In a paper read before the American Climatological Association, May 28,¹ 1885, I first advanced the view that hay-fever and perennial asthma are virtually one and the same disease, the one being a vasomotor rhinitis, the other being a vasomotor bronchitis, the paroxysms being excited, in each case, by some peculiar atmospheric condition. The atmospheric condition, as we know in hay-fever, is the presence of the pollen of flowering plants or some other vegetable emanation; whereas the atmospheric condition in perennial asthma, as we may designate those cases of asthma which occur during the whole year and do not depend upon hay-fever, is dependent upon some obscure element which we are, as yet, unable to trace with the same degree of definiteness as we are enabled to trace it in hay-fever. Hay-fever is dependent upon three conditions:

First. A neurotic habit, as was conclusively shown by Beard.²

Second. The presence of pollen in the atmosphere, as shown by the unrivalled experiment of Blackley.³

Third. A disordered condition of the nasal passages, as shown by Daly.⁴

Now, the view that I advocated is that asthma also is dependent on three conditions:

First. A general neurotic condition, as demonstrated by Salter.⁵

Second. A diseased condition of the nasal mucous membrane (not the bronchial).

Third. Some obscure condition of the atmosphere exciting the paroxysms.

The view as regards the neurotic condition is generally accepted; that as regards the atmospheric condition, I think, is one which must be generally accepted by all observers when we consider the diurnal and seasonable periodicity of the paroxysms. As regards the

¹ New York Medical Journal, April 24, May 1, 1886.

² Hay-fever or Summer-catarrh. New York, 1876.

³ Hay-fever. London, 1873.

⁴ Loc. cit.

⁵ Op. cit.

nasal condition as a predisposing cause of the attacks, the view is a novel one, and, naturally, would be looked upon as the hobby of a specialist. In my original paper, I made this assertion, that "a large majority, if not all, cases of asthma were dependent upon some obstructive lesion in the nasal cavity. This is evidenced by the immediate relief from the exacerbation by the use of cocaine in the nose in every case in which I have tried it, and, furthermore, by the cure of so many cases by the removal of the obstructive lesion in the upper air-passages."

This paper was read two years ago. The views there stated I would repeat with even more emphasis, for subsequent clinical observation has only served to confirm me in my belief of their correctness. That the lesion in a paroxysm of asthma is a vasomotor paresis of the blood-vessels supplying the bronchial mucous membrane, and not a bronchial spasm, I do not discuss, but accepting this theory as the only one which can explain the symptoms, the question arises, What is the connection between the nasal mucous membrane and that of the bronchial tubes? I have already written¹ fully on the subject of the great respiratory functions of the nasal mucous membrane, and I need not repeat them here at length. In brief, the most intricate, the most delicate and most important part of the whole respiratory tract lies in the nose, in that mass of bloodvessels which we call the turbinated tissues, and which serve to supply the inspired air with moisture, by pouring out upon the surface of the mucous membrane a large amount of water—sixteen ounces in the course of the day—by which the inspired air becomes saturated with moisture, this function being necessarily regulated with an extreme degree of nicety of adjustment. This establishes, in what way or through what nerves or ganglia I do not discuss, but to my mind does unquestionably establish a most intimate connection between the two portions of the respiratory tract. The blood supply in the nose being regulated by the same vasomotor tract as that which regulates the blood supply of the bronchial tubes, a disturbance in one region is liable to be followed by a disturbance of the other; a morbid condition in one region renders the other especially susceptible to diseased processes. This, briefly, is the history of the connection between the two parts. Hence, we see, therefore, how a diseased condition in the nasal cavity may predispose a neurotic patient, under favorable atmospheric conditions, to an attack of asthma; the same line of reasoning, as will be noted, being followed here as in the case of hay-fever. This connection between the two regions I have not found alluded to by any writers, and yet I cannot but think that Hyde Salter² must have entertained a somewhat similar idea when he says, in speaking of the causation of asthma, that we may divide the cases into two classes: First, cases in which the essential cause

¹ Loc. cit.

² Op. cit., page 81.

of disease, "that which constitutes the individual an asthmatic," is some organic lesion, possibly not appreciable, either in the bronchial tubes or some part physiologically connected with the bronchial tubes. Second, cases in which the organic lesion does not exist, in which the tendency to asthma is due to something from within, not from without, in which the cause of disease is a congenital and possibly inherited idiosyncrasy. The large clinical observation and study which were the basis of Salter's classical work, could not fail to have impressed upon him that a diseased condition of the upper air-passages was prominently active among the predisposing causes of asthma. It would seem a rather broad statement to make that all cases of asthma find their predisposing cause in intranasal disease, and yet I am very confident that it is very largely, if not entirely, true. Certainly, in my own observation, I have seen no case in which this could not be stated. The question suggested by Mackenzie¹ here arises, What constitutes a typically healthy nose? Mackenzie seems to think that there is a very large difference in individuals, even in health, and rather suggests that a typically healthy nasal cavity is difficult to find. On the contrary, I think that every nasal cavity which shows a departure from the normal type should be regarded as in a diseased condition. The true test, however, in these cases is this: if we find diseased conditions, the removal of which cures an asthma, my proposition, in that individual case, is certainly established. I make the general statement that all cases of asthma have intranasal disease, without giving definite proportions. This may seem rather broad, when we find eminent physicians of the present day, such as Fothergill, Flint, Loomis and others, adhering to the old theory of bronchial spasm, and not mentioning pathological conditions in the nasal chamber as a possible cause of the disease. That my view is by no means entertained by laryngologists is shown by the fact that Böcker² makes the statement that asthma is seldom associated with polypi and seldom cured by their removal, and that hay-asthma is caused by direct irritation of the bronchi, and, further, that, normally, asthma cannot be produced in the nose.

This first assertion of Böcker seems, to me, to be a very grave reflection on his skill as an operator. In the *Union for Internal Medicine*, May and July, 1886, Lublinski, Heyman, Böcker and Krause assert that, in many cases, asthma is independent of a pathological condition of the nasal passages. Schech,³ however, states that, in sixty-four per cent. of cases of asthma, he found intranasal disease, and further adds that there must be associated excessive nervous irritability—in other words, the neurotic habit.

¹ Hay-fever, London, 1885, page 25.

² Deutsche medicinische Wochenschrift, 1886, Nos. 26 and 27.

³ Münchener medicinische Wochenschrift, 1887, Nos. 40 and 41.

In looking over my notes, I find I have recorded histories of eighty cases of asthmatics treated during the last five years. Not satisfied with the study of these records, and in order to make my investigation as thorough as possible, and, at the same time, bring the reports up to date, I mailed to each one of these patients, some of whom I had not seen for a considerable time, a printed circular, in which I propounded a series of questions. These questions I will not recapitulate, as they are suggested by the headings in the following analysis of my tables. The last question was, "Please state candidly and without favor what benefit, if any, you have received from the treatment, and to what you attribute your improvement or cure." The following analysis sets forth the result:

Total number of cases of asthma	80
Males	47
Females	33
Hay asthma	34
Males	26
Females	8
Perennial asthma	46
Males	21
Females	25

Perennial Asthma—Family History.

Clear in	9
Neurotic	3
Bronchitis and asthma	2
Asthma	4
Asthma and hay fever	4
Bronchitis	2
Asthma, bronchitis and neurosis	1
Phthisis	1
Hay fever	1
Asthma and neurosis	1
Unknown	18
Total	46

Hay Asthma—Family History.

Asthma in	14
Clear in	5
Phthisis and neurosis	1
Neurotic	2
Hay fever	2
Asthma and neurosis	2
" " hay fever	2
" " neurosis and hay fever	1
Neurosis and hay fever	1
Unknown	4
Total	34

The prominent feature shown here is the large preponderance of cases which show a decided neurotic family history; 25 of the 30 cases of

hay-asthma being of inherited neurotic habit, when the history is known, while in the perennial form 16 of the 28 cases, in which the history is ascertained, show the neurotic tendency.

Age of first attack.	Perennial asthma.	Hay asthma.
1st ten years of life	5	5
2d " " "	9	7
3d " " "	12	11
4th " " "	6	6
5th " " "	5	4
Over fifty years of age	8	1
From birth	1	...
Total	46	34
Average age of first attack	29 years.	2½ years.
Oldest case, 72; youngest, congenital.		

We notice that the tables show that the largest number of cases of asthma, in both forms, develop during the third decade of life, while no period is notably exempt. This differs from Salter, who states that most cases develop during the first decade.

Climatic Influence on Hay Asthma.

Greatest relief at high altitude	11
" " " low "	1
" " " sea "	6
" " " New York City	3
Suffer equally everywhere	3
Unknown	10
Total	34

Climatic Influence on Perennial Asthma.

Greatest relief at high altitude	11
Suffering more " "	1
Greatest relief at sea "	2
Suffering more " "	7
" " " equally everywhere	12
Greatest relief at low altitude	1
" " " in New York City	1
Unknown	11
Total	46

Combining these two tables in one we find as follows:

Climatic Influences on the Two Forms of Asthma.

Better at high altitudes	22
" " at sea shore	8
" " in city	9
Unaffected by locality	13
Irregular	9
Effect of locality unknown	19
Total	80

We notice here that whereas in hay fever the seashore affords the greatest relief, after asthmatic symptoms set in the same rule applies to both forms, and that high altitudes are most beneficial; and yet I think no rule can be formulated for the cases as a class. They are essentially fickle, and each one must be advised from personal and individual considerations.

Hay Asthma.

Nasal symptoms immediately preceding attack, such as sneezing with watery discharge from the nose	29
No symptoms preceding attack	5
Total	34

Perennial Asthma.

Nasal symptoms preceding attack	33
No nasal symptoms preceding attack	12
Cutaneous eruption preceding attack	1
Total	46

This showing, it seems to me, is of the greatest importance, as sustaining the original assertion made in the early portion of the paper.

It should be mentioned that many patients entirely ignore the nasal symptoms, in the larger discomfort arising from the dyspnoëic attack, and only recall them when their attention is turned in that direction. We see, then, that, of the 80 cases, the asthmatic attack set in with sneezing, etc., in 62.

The one case in which a cutaneous eruption occurred is interesting only with reference to the neurotic explosion.

Hay Asthma.

History of previous catarrhal trouble	23
No history of previous catarrhal trouble	11
Total	34

Perennial Asthma.

History of previous catarrhal trouble	31
No history of previous catarrhal trouble	15
Total	46

We see here that, of the 80 cases, 54 give a history of previous catarrhal trouble. Yet the testimony of patients in this matter is not to be relied upon, as many patients have undoubtedly notable impairment of the nasal respiratory function, without being conscious of suffering from what they call catarrh. Moreover, in a large proportion of nasal disorders, the symptoms are referred, by the individual, to the throat, while "catarrh" is popularly referred to the nose.

Intranasal Condition—Hay Asthma.

Hypertrophic rhinitis	9
“ “ and deflected septum	12
Polypi and deflected septum	5
Polypi	4
Deflected septum	3
Elongated uvula	1
Total	34

Intranasal Condition—Perennial Asthma.

Hypertrophic rhinitis	13
Nasal polypi	11
Hypertrophic rhinitis and deflected septum	11
Polypi and deflected septum	6
Deflected septum	3
Adenoid and hypertrophic rhinitis	2
Total	46

I have never known a case of hay-fever or asthma to occur in other than an obstructive lesion of the nose or upper air-passages, as will be seen by this table; this was the case in every one of the 80 cases, including the elongated uvula, which became a source of respiratory obstruction.

Treatment—Hay Asthma.

Hypertrophic rhinitis, treatment by caustics: Cured, 7; improved, 6; unimproved, 1.
 Deflected septum, operated on by author's nasal saw: Cured, 8; improved, 6.
 Nasal polypi treated by snare, without caustics: Cured, 2; improved, 1.
 Treatment by snare and septal saw in cases of polypi and deflected septum: Cured, 1; improved, 1.
 Cases treated by uvulotomy: Cured, 1.

Treatment—Perennial Asthma.

Hypertrophic rhinitis, treated by caustics: Cured, 8; improved, 5.
 Polypi treated by snare, without caustics: Cured, 15; improved, 3.
 Deflection of septum operated on by author's nasal saw: Cured, 3; improved, 4; unimproved, 1.
 Adenoid growths removed by snare: Cured, 2.

The treatment, as will be seen, has been such as our English friends regard as harsh, and in many cases unwarranted. I think it but justice to say that, in some cases, patients have been unwilling to continue on account of this, and yet, with the use of local anæsthesia, these operations are not painful; it is the nervous strain on this class of patients which has taxed them most severely. That the surgical treatment of nasal diseases is fully justified I think the following table amply demonstrates:

Results of Treatment—Hay Asthma.

Cured	18
Improved	14
Unimproved	1
Unknown	1
Total	34

Results of Treatment—Perennial Asthma.

Cured	28
Improved	12
Unimproved	2
Unknown	4
Total	<hr/> 46

It is not the province of this article to discuss the general therapeutics of asthma, for, in the large majority of these cases, the treatment has been purely local, and yet, in many instances, internal medication has successfully been resorted to, such as the use of the iodides, zinc and belladonna, the three remedies on which I have placed the greatest reliance.

The point to which I desire to give the greatest emphasis is that local treatment of the intranasal disease, which I have invariably found in these cases, affords us by far the most satisfactory method of controlling this distressing and heretofore intractable disease. This seems to be particularly true when the case presents itself for treatment before the age of twenty. In the above tables, four cases of hay-asthma and seven of perennial asthma were under twenty, and all were cured.

It should be remembered that these cases have all come under the observation of a throat specialist, and, hence, a very good reason is immediately apparent why he should not see cases of asthma not dependent on nasal disease. This I have endeavored not to disregard in what has been written, and yet, if the foregoing statements may seem extreme, I can only say that I have endeavored to analyze my cases and report the results with fairness and candor.

PERFORATING ULCERS OF THE FEET, OF AT LEAST TEN
YEARS' DURATION, PRECEDING OTHER SYMPTOMS
OF TABES DORSALIS:

ASSOCIATED WITH CHARCOT'S JOINT LESION, AND (?) WITH PERFORATING
ULCER OF THE TONGUE.

BY H. HANDFORD, M.D., M.R.C.P.,
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THE following case is interesting on many grounds. It commenced as a typical example of perforating ulcer of the foot; and afterward became symmetrical, affecting the soft parts over the metatarso-phalangeal articulations of both great toes. Sensation was not sufficiently interfered with to prevent pain on walking being his chief complaint. It was the pain that made him beg to have the toe amputated. The

ulcers frequently healed after prolonged rest, showing that mechanical injury, in addition to altered innervation, was necessary for the continuance of ulceration. The toes were eventually amputated close to the site of ulceration, and yet the healing of the wounds was fairly rapid and sound. Though now associated with several symptoms of tabes dorsalis, the perforating ulcers existed for six or eight years, at least, without any discoverable sign of locomotor ataxia, and even now the *ataxic* symptoms proper are very slight indeed.

If we accept the positive assurance of the patient that the ulcer of the tongue was not preceded by any stage of induration, we must receive it as an example of a very rare condition: namely, perforating ulcer of the tongue; and, moreover, a perforating ulcer which has healed.

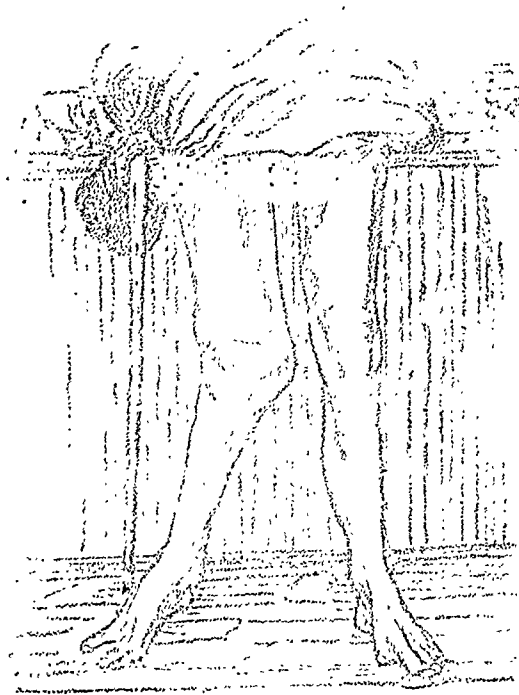
On the whole, it appears to be a case of tabes dorsalis in which the peripheral multiple neuritis, which is almost invariably found at some stage, has appeared early, as shown by the ptosis, optic atrophy, joint lesion (knee) and perforating ulcers. It is doubtful whether it may not be an instance of true tabes dorsalis commencing in a peripheral neuritis, as suggested recently by Professor Leyden, and affecting the posterior columns of the cord secondarily. In this suggestion I have assumed peripheral neuritis to be the most probable cause of the joint lesion as well as of the perforating ulcers. In this connection the "Report of the Committee on Joint Disease in Connection with Locomotor Ataxia," published in vol. xx. of the *Transactions of the Clinical Society of London*, is interesting, and especially the case of J. Griffiths related on page 299.

CASE.—W. W., aged forty-one, a bricklayer's laborer, and formerly a laborer at the Gas Works, was admitted into the Nottingham General Hospital, under my care, on March 10, 1887, complaining of swelling of the left knee.

He had gonorrhœa and a sore on the penis twenty years ago, but does not remember having any rash or sore throat. We may take it then, that, if he had syphilis, the secondary symptoms were mild. He has had no tertiary affection, unless the condition of the tongue to be presently described was such. About fifteen years ago, a railway metal crushed his right great toe, and burst the skin. The wound soon healed, and remained sound for four or five years. After that, a sore appeared on the plantar surface of the right great toe opposite the metatarso-phalangeal articulation. In a few months, a similar sore appeared in exactly the same position on the left great toe. With rest these sores readily healed, but as readily broke out again as soon as he began to walk and work. I first saw him in 1879, when he was in the hospital under the care of my colleague, Mr. Wright. The ulcers were rounded and deep, and a sinus led down to the sesamoid bones which necrosed and eventually were exfoliated. The ulcers were surrounded by a zone of very greatly indurated and thickened epithelium. The patient was anxious to have his toes amputated, but eventually the ulcers healed, as they had done before. At this time there were no symptoms of tabes. After many vicissitudes, he determined to have the left toe off. It was

amputated about four years ago, and the wound healed well. For some months after that he was able to work as a bricklayer's laborer, and go up a ladder with a load of bricks. There was evidently no ataxia at this period. Two years later the right great toe was similarly removed at his urgent request, by my colleague, Mr. A. C. Taylor, on account of the pain of the ulcer on its under surface. I have no record as to the existence or not of any area of anæsthesia, or even of diminished sensibility, but there is no doubt that on both feet the ulcers were painful during walking, and it was because of this pain that he insisted on having the toes removed. It is curious that a neuritis sufficient to affect gravely the nutrition of the part should not have interfered more with sensation. Since he lost both toes he has not been able to work.

FIG. 1.



Charcot's joint lesion affecting the right knee-joint. (From a photograph.)
The loss of both great toes is shown.

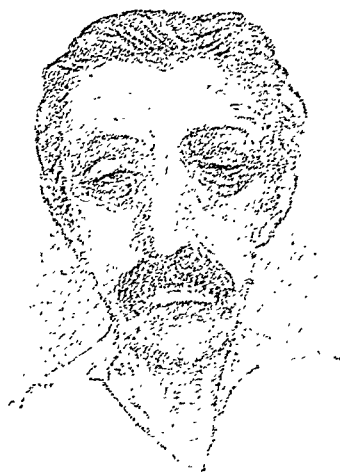
Eight or nine weeks before his admission into the hospital on the present occasion, his right leg became swollen from the knee to the ankle, and later the swelling extended up the thigh. It was not due to any injury, so far as he is aware. There was much pain in the knee at first. Now the swelling of the leg and thigh is gone, as is also the pain; but the knee remains much enlarged (Fig. 1). There is no distinct fluctuation, but much pulpy swelling, and considerable enlargement of the ends of the bones. The internal lateral ligaments have yielded, and there is considerable genu valgum on standing, which he can do without pain. The movements of flexion and extension are free, and he can walk with the aid of a stick.

There is a large depression about the middle of the left border of the tongue. It is quite soft, smooth and soundly healed. He thinks he

bit his tongue about a year ago, and that an ulcer followed. He is sure it was not preceded by a hard lump. It is doubtful whether this has been a gumma or a perforating ulcer. The history and the absence of induration and puckering suggest the latter.

He has some cardiac irregularity on excitement, but no murmur. He sleeps moderately well, his speech is very thick, and he complains of occasional shooting pains. His sight is fairly good. He has a very morose expression, with thick, heavy lips and moderate double ptosis (Fig. 2). There is commencing double optic atrophy. His hearing is

FIG. 2.



From a photograph; showing the double ptosis, thick lips and general morose expression.

good, but taste is somewhat defective, though he can distinguish salt and sugar. No affection of the muscular sense could be detected. There is complete absence of knee-jerk on the left, but on the right the knee is too much swollen for any definite result to be obtained. He cannot stand with the eyes closed. He frequently has some difficulty in passing water, and occasionally passes it involuntarily. Common sensation appears to be blunted, but nowhere lost. With the eyes blindfolded he could generally tell when he was touched on the leg with a feather, and usually distinguished the proper side, *i. e.*, right or left; but he was very frequently wrong in localizing. Occasionally, after he had been touched many times, he quite ceased to be able to tell correctly the spot touched; and even continued to feel touches and localize them for a minute or two after the experiments had ceased. He could localize correctly a touch with the finger at first, and distinguish it from a knife-point, but afterward he confused the two. There was no very evident delay in the perception of sensations. The sense of contact is less acute on the stump of the right toe than on that of the left. Heat and cold can only be distinguished in the legs when the water in the test-tube is boiling.

He can place the legs in any position indicated, and also tell in what position they have been placed for him. In the upper extremities

common sensation is acute as compared with the lower. Sensation to pain is moderately good except on the left forefinger, where a pin stuck into the skin, so as to stand up, was said to be a touch with a finger.

He remained in the hospital several months, but the knee did not improve much and he went out. After he had begun to go about again with the aid of a stick, a fresh typical perforating ulcer, surrounded by a zone of thickened epithelium, developed on the under surface of the stump of the left great toe (Fig. 3). In a month or two, however, it was healed.

FIG. 3.



Perforating ulcer on the stump of the left great toe which had been amputated four years previously for a perforating ulcer higher up.

A year later, in March, 1888, he remained in very much the same condition. The ulcer remains healed, but he has had a fresh one on the upper surface of the stump of the left great toe. This was evidently caused by the friction of his slipper and eventually healed. He only walks about the house with a stick. The knee remains unaltered, except that it gives way more on walking, but it continues painless. The tongue has not broken out afresh. He walks without any incoördination of movement; there is no jerking of the limbs or stamping of the heels.

EXTRAUTERINE PREGNANCY TREATED BY CYSTECTOMY, OR CYSTOTOMY WITHOUT EXSECTION,

WITH SPECIAL REFERENCE TO CASES IN WHICH THE FŒTUS IS LIVING
AND VIABLE.

BY ROBERT P. HARRIS, A.M., M.D.,
OF PHILADELPHIA.

RECENT important changes in the treatment of extrauterine pregnancy, at all periods of development, and the diminished mortality under exsection in cases in which the object is to save two lives, have led me to take a more hopeful view of the whole subject than I felt warranted in taking a year ago, in a paper entitled "Primary Laparotomy in Cases of Extrauterine Pregnancy." The term *primary* has been so differently applied of late years, that it has ceased to convey to the mind any definite meaning, such as it had until quite recently. *Laparotomy* has become of such general use in many countries as a legitimate term, that I can see no valid objection to its continuance; but the nomenclature has become deranged by the introduction of exsective operations at every stage of embryonic and foetal growth, from three weeks to full maturity. Thus we have exsection: 1, before rupture, while the embryo is presumed to be alive; 2, before the same accident, when the foetus is already dead; 3, after rupture, when the object is to save the woman from bleeding to death; 4, at a later period, when the foetus is alive, and is being developed either subperitoneally, or within the abdominal cavity; 5, at or near foetal maturity, in the hope of saving both child and mother; and 6, when the foetus has been some time dead, to save the woman from the fatal effects of septic infection, hectic, peritonitis, perforation of hollow viscera, etc. These various operations bear an age in the reverse order of their enumeration.

The oldest exsective operation was simply the enlargement of a foetal fistula of the abdominal wall, and the removal of a dead and putrid foetus in fragments or entire. The next step in progress was to disregard the fistula and make an incision into the cyst directly over some presenting part of the foetus. This was first done, on August 20, 1595, by Jacob Noierus,¹ in the case of Giralda Tiaca, of Grandiniano, upon whom he had, on a former occasion, performed the first-mentioned section, she having had two ectopic impregnations within a few years.

At a much later period, when surgeons became more venturesome, the dead foetus was delivered by abdominal section while still unchanged by putrefaction, there being no fistula: and, finally, a decidedly more

¹ Jacobus Primerosil "De Mulierum Morbis," 1655, p. 318.

daring step was taken, in the exsection of a living and mature foetus, in the year 1813. This latter operation became designated in time, by way of distinction, as the *primary operation*, and the older form, in which the foetus is already dead, as the *secondary* one. When Mr. Tait began to exsect Fallopian foetal cysts after their rupture, he claimed that his operation was better entitled to the term *primary*; and now we have another claimant in Dr. John S. Hawley, of New York,¹ who, with several others, has exsected a foetal cyst prior to rupture, and calls his a *primary laparotomy*. We have also the same title given by Dr. Francis H. Champneys,² of London, to *abdominal section in the latter half of pregnancy, the child being alive*. So, as the term has in a measure lost its original signification and now belongs to nothing definite, I must drop it for the present, until the nomenclature is settled. In importance, the operation designed to save mother and child is certainly *primary*, and it was this which gave the distinctive title originally; the *primitive* operation is that described by Dr. Hawley as the first in the order of time.

The tabular record to date shows that the prognostic status of the operation has been decidedly improved of late years; as is evinced by the fact that four women have been saved under the last ten operations. By correspondence, either directly or indirectly with twenty of the operators, I am enabled to fill up many points in the tabular matter that would otherwise have appeared in blank, as well as to give an estimate of the conditions of the women when subjected to the use of the knife, and to state the causes of their death and of that of the children who survived beyond a few hours or days.

When an extracted ectopic child is well formed, and has lived beyond the first month, there is no reason why it should not have the same prospect of continuing to live that a normally delivered foetus has, but for the fact that it is too frequently motherless, and is often much neglected or injudiciously cared for. A fair proportion of ectopic foetuses will be found perfect in form, and about one in three extracted at full term will present all the signs of physical vigor. Of the thirty children in my table, two boys, aged respectively six and eight years, are now alive and well; a third boy had an intemperate father, and, although hale and strong, was fed into cholera infantum at eighteen months; a fourth child, a female, whose mother survived, died of croup at eleven months; a fifth fell a victim to diarrhoea at seven months; a sixth was alive and well when lost sight of at six months; and a seventh died of broncho-pneumonia at the same age.

The placenta always has been, and is still a subject for anxiety in the exsection of a living or dead foetus. What to do with it was for years

¹ New York Medical Journal, June 16, 1888, p. 648.

² Transactions Obstetrical Society of London for 1887, p. 456.

ABDOMINAL EXSECTION OF THE LIVING

No.	Date.	Operator.	Locality.	Age.	Preg- nancy.	Gestation.	Condition of woman at time of operation.	Result to woman
1	Aug. 23, 1813	Dr Brunkert	Berlin,	32	3d	9 months	Sac ruptured; legs of foetus protruding; peritonitis.	Died in 40 hours; peri- tonitis.
2	Dec. 7, 1814	Dr. Domenico Novara	Porto Mau- rizio, Italy,	38	5th	9 "	Pseudo-labor-pains; fever; cough, emaciation, abdomi- nal dropsy and oedema of the extremities.	Died in 33 days from slow septic poisoning.
3	1827?	Dr. Matfeld	Tübingen,	21	3d	9th m'th	In pseudo-labor 8 days before the ectopic gestation was re- cognized.	Died in 20 days from subacute peritonitis.
4	Mar. 1, 1841	Dr. Hauff	Germany,	?	1st	35 weeks	Violent labor; lame; rapid pulse; much prostrated.	Died in 24 hours of in- ternal hemorrhage.
5	1852	Prof. Pietro Lazzati	Milan,	?	?	9 months	In <i>extremis</i> ; special danger not stated.	Died in 25 hours; shock and exhaustion.
6	Mar. 27, 1863	Prof. Eugen Köberlé	Strasbourg,	39	3d	9 "	Peritonitis; fecal vomiting from intestinal obstruction; in <i>extremis</i> .	Died soon after opera- tion; peritonitis and hemorrhage.
7	April 21, 1864	Dr. Rob. Greenhalgh	London,	40	2d	8 "	In <i>extremis</i> ; emaciated; jaun- diced; oedema of lower ex- tremities; almost constant vomiting; violent colicky pains.	Died in 32 hours from collapse.
8	Mar. 3, 1870	Dr. E. Paul Sale	Aberdeen, Mississippi,	22	1st	9 "	Pulse 135, small and weak; temperature 97 $\frac{1}{2}$ °; rupture of cyst threatened.	Died in 4 days of sepi- cemia.
9	Oct. 5, 1872	Dr. John Scott	London,	23	1st	29 or 30 weeks	Pulse 135; temp. 104.2°; pain; vomiting; prostration.	Died in 5 hours of heart- clot.
10	Aug. 14, 1875	Mr. T. R. Jessop	Leeds, Eng.	26	2d	33 or 34 weeks	Prostrated by pain and re- peated attacks of vomiting; pulse feeble and rapid.	Recovered.
11	Mar. 5, 1877	Prof. Otto Spiegelberg	Breslau,	35	2d	40 weeks	Sac ruptured; peritonitis; pulse 148; fecal vomiting from intestinal obstruction.	Died in a few hours; collapse from hemor- rhage.
12	May 25, 1877	Dr. Heywood Smith	London,	32	4th	9 months	Pulse 100; temp. 98.2°; urine highly albuminous.	Died in 22 hours; hemorrhage.
13	Nov. 5, 1877	Dr. Henry Gervis	London,	39	9th	36 $\frac{1}{2}$ wks	Vomiting and pain; strength falling.	Died in 56 hours; peri- tonitis and hemor- rhage.
14	Aug. 19, 1878	Dr. Ernst Fränkel	Breslau,	34	3d	33 $\frac{1}{2}$ "	Pseudo-labor-pains; fever; emesis; rupture of sac threatened.	Died soon after opera- tion; hemorrhage from separating placenta.
15	May 29, 1879	Prof. Carl Schröder	Berlin,	33	7th	34 $\frac{1}{2}$ "	General health fair.	Died in 36 hours; fever, vomiting, meteorism, exhaustion.
16	Dec. 19, 1879	Dr. B. Chris. Vedeler	Christiana,	40	4th	35 "	Sac ruptured; peritonitis; affected with gonorrhœal endometritis.	Died the next after- noon; peritonitis.
17	Jan. 10, 1880	Prof. C. C. Th. Litz- mann	Kiel,	29	2d	39 $\frac{1}{2}$ "	In a hectic condition; opera- tion of election(?).	Died in 16 days; sepi- cemia and hemor- rhage.
18	Jan. 31, 1880	Mr. Lawson Tait	Birmingham,	33	7th	9 months	Exhausted from severe pains and loss of rest.	Died on the 4th day; "prolonged shock."
19	Mar. 11, 1889	Dr. H. P. C. Wilson	Baltimore,	24	4th	9 "	Pulse 104; temp. 100°, rose to 130, and 103.6° in 8 hours after operation.	Died in 50 hours; col- lapse.
20	July 26, 1880	Dr. W. Netzel	Stockholm,	28	3d	9 "	.....	Died in 45 hours, ex- hausted by hemor- rhage.
21	July 9, 1881	Prof. Aug. Martin	Berlin,	39	3d	7 "	Emaciated; sleep prevented by constant pain.	Recovered.
22	July 15, 1881	Dr. Giuseppe Beisone	Buriasco, near Pinerolo, It.,	40	1st	9 "	No grave symptoms yet de- veloped; pseudo-labor-pains.	Died on the 6th day; septicæmia.
23	Feb. 15, 1882	Dr. Hildebrandt	Königsberg,	26	2d	9 "	Almost moribund from peri- tonitis.	Died on the 10th day; slow peritonitis.
24	Oct. 3, 1882	Dr. Hildebrandt	Königsberg,	28	7th	34 $\frac{1}{2}$ wks.	In <i>extremis</i> .	Died in 17 $\frac{1}{2}$ hours; collapse.
25	June 6, 1885	Prof. John Williams	London,	30	2d	35th wk	Thin and anæmic; subject to attacks of vomiting and pain with symptoms of peritonitis.	Recovered.
26	Nov. 4, 1885	Prof. J. Lazarewitch	Kharkof, Russia,	27	2d	9 months	Suffering from violent abdom- inal pains; had had perito- nitis and jaundice.	Recovered.
27	Jan. 27, 1886	Prof. A. Stadfeldt	Copenhagen,	29	1st	9 "	Pulse 110; temp. normal.	Died in 38 hours; prob- ably hemorrhage.
28	Oct. 19, 1886	Dr. F. H. Champneys	London,	42	4th	7th "	Sleep disturbed by abdominal pain.	Died in 11 $\frac{1}{2}$ weeks; septic intoxication.
29	Mar. 29, 1887	Dr. Joseph Price, Philadelphia.	Camden, New Jersey,	37	5th	7 $\frac{1}{2}$ "	Sac ruptured; peritonitis; greatly emaciated	Died in 15 days; hemor- rhage.
30	Oct. 29, 1887	Prof. Aug. Breisky	Vienna,	39	...	9 "	.....	Recovered.

AND VIABLE EXTRAUTERINE FŒTUS.

No.	Result to child.	Remarks.	References.
1	Lived, male, strong, healthy at 3 weeks; not mentioned in operator's account of case on July 24, 1817, in Rust's Magazin.	Operation by long incision; intestines could not be replaced until evening of second day; incision 9 inches.	Magazin für die gesammte Heilkunde, von Johann N. Rust, 1818, Bd. iii. S. 1.
2	Lived, cried at once, was a large and well-formed female.	Placenta left in situ; cord ligated and left hanging out of lower end of abdominal wound.	Journ. Univer. des Sciences Méd., 1816, t. iii. pp. 119-124.
3	Lived.	Placenta left intact in the iliac fossa, and the abdominal wound closed; exfoliation began on 6th day.	Neue Zeitschrift für Geburt, 1834, Bd. i. S. 134
4	Died in 50 hours; lower extremities deformed.	About two-thirds of placenta separated by fingers and scissors and removed; part left bled largely.	Medicinische Annalen (Heidelberg), 1842, Bd. vii. S. 439.
5	Alive, but did not breathe.	Patient, the wife of an intimate friend of the operator, was operated upon as a possible, last hope.	Manuale del parto Meccanico od Instrumentale del Lovati, Milano, 1854, p. 194.
6	Died on the second morning; born asphyxiated; 17¾ in. long.	Placenta torn in the delivery of the fœtus; not removed; hemorrhage arrested by sponge pressure.	Gazette Médicale de Strasbourg, 1863, t. x. p. 160.
7	Died in a few minutes.	Dr. Greenhulgh was an ardent advocate of Cæsarean section, and probably regarded this case as one of little encouragement; but to be operated on as a duty.	Medical Mirror, Nov. 1864, p. 689.
8	Lived 6 months; died of broncho-pneumonia (Black)	Placenta removed; an intrauterine fœtus delivered by Cæsarean operation; died in a year of measles.	New Orleans Med. and Surg. Journ., 1870, vol. xxiii. p. 727.
9	Died on the second day.	Placenta removed; much blood lost; hemorrhage ceased from the woman fainting.	Trans. Obstet. Soc. London, 1873, vol. xv. p. 309.
10	Lived; female; died at 11 months of croup.	Placenta intact; no cyst; fœtus free in abdominal cavity; head under stomach	Trans. Obstet. Soc. London, 1876, vol. xvii. p. 261.
11	Lived 3 months; hand-fed; died of inanition.	Placenta incised; violent hemorrhage; ligated and partially removed.	Archiv für Gynäkol., 1879, Bd. xiii. S. 74.
12	Alive; heart beat 30 to 40 minutes.	Placenta torn in operation; torn portion ligated and removed.	Trans. Obstet. Soc. London, 1878, vol. xx. p. 5.
13	Died in 6 hours.	Placenta intact; became decomposed; cyst wall likewise; 1½ pint of blood in abdomen.	British Med. Journ., 1877, vol. ii. p. 884.
14	Died in 24 hours.	Placenta separated in operation, and almost entirely removed; violent bleeding resulted.	Archiv. für Gynäkol., 1879, Bd. xiv. S. 197.
15	Lived; alive and well at 6 months, then lost sight of.	Placenta intact; cyst plugged with salicylated wool; considerable blood-loss in operation.	Zeitschrift für Geburtshülfe und Gynäkol., 1880, Bd. v. S. 115.
16	Died the day after the operation.	Placenta intact.	Norsk Magazin for Lægevidenskaben, Juni, 1880, Tiende, Binde, 6te Hefte, S. 86.
17	Died in 15 minutes.	Placenta intact; no bleeding until the 13th day; all placenta came away by the 16th day; sepsis began on 12th day.	Archiv für Gynäkol., 1880, Bd. xvi. S. 362.
18	Lived, male; active and well at last report.	Placenta intact; fœtus developed between the laminae of the right broad ligament (see case 30)	Obstet. Journ. Great Brit. and Ireland, Oct. 1880, vol. ii. p. 577.
19	Lived 18 months; male; died of cholera infantum.	Placenta intact; it was found firmly adherent at the autopsy; an intrauterine twin had been born 36 days before.	Trans. Amer. Gynecol. Soc., 1882, vol. vi. p. 461.
20	Died in 48 hours.	Placenta divided in operation, with severe hemorrhage.	Hygeia (Stockholm), 1881, vol. xliii. p. 169.
21	Alive; cord pulsated; did not breathe; had a large encephalocele	Placenta removed after ligation at three points.	Berlin. klin. Woch., Dec. 26, 1881, Bd. xviii. S. 753-775.
22	Lived; male; alive and well in May, 1888.	Placenta intact; located mainly in right iliac fossa; small and malformed.	Gazetta Medica di Torino, 1881, vol. xxxii. pp. 553-557.
23	Lived.	Placenta undisturbed; located deeply down in the lower pelvis	Berlin. klin. Woch., July 20, No. xxix. S. 465.
24	Alive; asphyxiated beyond resuscitation.	Placenta left in place; it was over the fundus uteri and extended into the Douglas space.	Opus citatus, S. 463, 1885.
25	Died in a few minutes; heart-beat 108 before operation; head and neck were cedematous.	Placenta not removed; located anteriorly between umbilicus and right ant. sup. spinous process; placenta came away between July 3d and 14th; woman well and fat Aug. 14th.	Brit. Med. Journ., Dec. 3, 1887, p. 1213; Trans. Obstet. Soc. London, 1887, vol. xxix. p. 482.
26	Lived 26 days; wet nursed; had two eclamptic seizures; died of inanition	Placenta and cyst drawn out, pursed up in the abdominal wound; ligated; and a large part removed.	Vratch. St. Petersburg, 1886, vii. 66, 115; Repertoire Universelle de Nouvelles Archives d'Obstet. et de Gynec., 25 Juil, 1886, p. 277.
27	Lived 7 months; died of diarrhoea.	.....	Hospitals Tidende, Sep. 22, 1886, p. 889.
28	Died soon after operation; female, 15 in long, 2lbs 10oz.	Placenta intact; cord allowed to bleed; no cyst, as in Case 10; fœtus with head downward.	Trans. Obstet. Soc. London, 1887, vol. xxix. p. 456.
29	Died in 4 hours; female; active at delivery.	Placenta intact; adherent to uterus, left ovary, broad ligament, right side of pelvis, ilium and colon.	Communicated by the operator, April 19, 1887.
30	Lived 19 days; died of an abscess of abdominal wall near the umbilicus.	Placenta and cyst excised from fold of broad ligament after ligating vessels; placenta located at superior part of cyst, and subperitoneal.	Wiener med. Woch., 1887, 48, 49, 50

a question in cases in which the child delivered was already dead; until, after many discouragements, it was discovered nearly a hundred years ago that it should be left intact, to separate spontaneously if the woman is to escape death by hemorrhage; and for the last twenty-five years it has been firmly established that in this class of cases the cyst and abdomen are to be stitched up together; the cord brought out at the lower angle of the wound; a drainage tube is to be used, and the abdominal cavity to be kept clean by occasional irrigation with warm water.

When the exsective operation for saving the living ectopic foetus, as well as the mother, was introduced seventy-five years ago, it was soon realized that not only was any attempt at peeling off the placenta fatal, but the non-interference plan, so successful after foetal death, was attended almost universally with the same result. After nineteen women out of twenty had died, in the half of whose operations the placenta had remained intact, Prof. August Martin, of Berlin (Case XXI.), made a new departure, by which he saved his patient; and he is now an advocate of ligating the placental vessels and removing this viscus whenever feasible. Unfortunately, the placental location and attachments are such in many cases that this new plan is not practicable, and the placenta must be left to exfoliate, with its accompaniments of danger, under which risk, however, Cases X. and XXV. were saved.

An ectopic placenta may be very much larger and thicker, or much smaller, than one developed in utero. In general, it is thinner and less developed and is sometimes divided into lobes, or is only a membranous and vascular cake. The death of the foetus does not necessarily cause entire placental death, but the placenta undergoes important vascular changes after its functional activity ceases with the death of the foetus. A half-developed foetus in some situations may be attached to a placenta which is out of all proportion to the foetal size and age; hence has risen the idea that the placenta may grow after foetal death; of which no absolute proof has as yet been produced, and it does not comport with the usual teachings of embryology. If the foetus and placenta are mutually dependent upon each other; if the child makes and circulates its own blood; and if the placenta is in *loco pulmonis* until the child can inhale air and use its lungs instead; then we cannot see why the placenta should, in any case, become exceptional and grow larger after its functional life is no longer called upon. It may be found a great deal larger than it should be some time after the death of the foetus, but what proof is there that it was not of this size at the time the foetus died, and that the hypertrophic condition did not in a measure cause the death of the latter? Prof. T. G. Thomas¹ found in one case that the placenta covered

¹ Transactions American Gynecological Society, 1884, p. 179

the intra-abdominal centre, and was attached to the ascending, transverse and descending colon, forming an enormous, thick and heavy growth of several pounds in weight; in fact, it was the largest placenta he had ever seen; the foetus had died at maturity, four months before. Is it probable that this placenta grew after its death? Is it not much more likely that it was too large for the foetus to be of normal proportion at any stage of gestation?

If all ectopic placentæ have originally been tubal, no matter where they may be found located in the abdominal cavity, as we are asked to believe, the migratory character of *abdominal* pregnancies would be less pronounced. To account for some of the remote localities of the placenta, we are also asked to credit the hypothesis, that a tubal ovum may be forced entirely from its attachments through a lacerated vent, and its placental surface after a migration form a new union for itself in a remote region of the abdominal cavity and develop to full maturity. Reasoning analogically, we cannot believe in this as a possibility; and we find much less difficulty in accounting for such cases on the hypothesis that they are *ab origine* abdominal. We know that, for a time at least, a human ovum is possessed of a certain measure of inherent and independent life, which admits of its migrating from the ovary along the Fallopian tube to the uterine cavity and there becoming attached, after which its inherent life is changed into one of dependence. A bird's egg, a seed and the bud of a tree are all endowed with an independent vitality, lasting longest in the seed. Apply blood-heat to the egg and the incubative process soon commences; stop the process by cooling sufficiently and the embryo dies, because heat has become an essential of its new dependent existence. As the inherent life is lost, the egg cannot be made to hatch by renewing the heat; it now only hastens its decay. The incubative process must be continued uninterrupted, or it will end in a failure. Moisture with heat will sprout a seed; dry it a second time: Will it then produce a plant? No, it will decay. If a human ovum has lost its independent vitality by becoming attached to the lining of the Fallopian tube or uterus, and is made dependent for existence upon a blood-supply, can it resume this lost independent life when it again migrates to form a new home for itself? Will not the simple separation of an ovum *in utero* cause it to die and be expelled? Prof. Koeberlé, of Strasburg,¹ once removed a uterus for a fibroid tumor, leaving the cervix and the appendages; the woman recovered, with a pervious cervical canal, through which she became impregnated, with a fatal result. Was this likely to have been a tubal pregnancy? Why is it that within a few years so much doubt has been cast upon the existence of an original abdominal variety of pregnancy,

¹ Des Grossesses Extrauterines : par Theodore Keller, 1872, p. 23.

to explain which away requires much more extravagant hypotheses than to credit it on the faith of many learned obstetrical writers?

One year ago, it appeared scarcely possible that an ectopic foetal growth *at full maturity* could be entirely removed, as by a form of enucleation, with complete success. But since the report of Case XXX., under Prof. Breisky, of Vienna, was issued, it has become a question whether his process of subperitoneal ligation and exsection cannot be made available in a fair proportion of intra-peritoneal cases. Prof. Breisky exsected the whole foetal growth—*i. e.*, amniotic sac, placenta and child, in a case in which the development took place external to the peritoneal cavity, between the laminae of the broad ligament, the placenta being located at the top of the cyst. Prof. Martin, of Berlin, and Prof. Lazarewitch, of Kharkof, now of St. Petersburg, prepared the way for this very complete enucleation, by operations 21 and 26, in which the location and attachments of the placenta prevented the removal from being as satisfactory in character. By these three methods of exsection, no doubt in the future, many of the fatal difficulties of the past may be overcome and the women saved. To peel off the placenta is almost certain to produce death, whether the child be extracted alive or after it has been some time dead; but to tie and cut, carefully and by slow progressive steps, may be done in some cases in which the attachments of the placenta will admit of it.

The operators who have failed in saving their patients, after the removal of living and viable ectopic foetuses, will be seen, by an examination of my table, to have been, with a few exceptions, those whose names have so often appeared in connection with other more hopeful and successful forms of abdominal surgery. When men, such as Koeberlé, Greenhalgh, Spiegelberg, Schröder, Litzmann and Stadfeldt were unsuccessful, it may be taken as evidence that there were very great difficulties to be contended with, either in the condition of the patient, the anatomical relations of the parts to be removed or both. What the operators had to contend with will be found in the important column in the table headed: *Condition of the woman at the time of the operation*. Some may think it unwise to have operated under such adverse and almost hopeless circumstances; but what better can be done until the improved acumen of the student of obstetrical diagnosis shall fit him to discover the ectopic character of a pregnancy at an early day? Besides, we are to reflect: 1, that the woman in a large proportion of cases believes herself to be normally pregnant, and does not call in a physician, or present herself at a maternity, until her health has failed or a *pseudo-labor* has actually commenced; and 2, that she will not submit to have the living foetus exsected until compelled to do so by pains, emaciation and other evidences of ill health, and by a consciousness of the fruitless character of her labor.

The term *operation by election* can hardly ever apply to these cases, for the reason that the surgeon has very little choice in the matter when called to consider what is to be done; he must operate, or see the woman die undelivered. There are cases, and these have been far more numerous, in which no opportunity is given to operate until after the *pseudo-labor* has terminated in the death of the foetus; when the whole character of the case changes, and there may be no occasion for haste, which may be fatal; but time may be allowed for certain important alterations in the placenta and its vascular connections, which being accomplished, its spontaneous separation may be effected with a greatly reduced risk after foetal extraction.

If the operation after foetal death, provided this has existed for at least ten weeks, can be performed with so much less danger than during its life; and if so few children are ultimately saved; it may be asked: Why not wait until the child is dead, and then operate? This plausible and puzzling question once presented itself to a company of three physicians in this city, who were in daily attendance upon a lady in *pseudo-labor*. She passed through the labor, the child died, her condition became apparently more favorable; they were waiting for the opportune time, when grave symptoms appeared, followed by her death in half an hour. In the thirty cases I have tabulated, the *condition* column does not give much encouragement for waiting, but rather the contrary. Many women have, however, in time past escaped all dangers under the false labor, and have even carried the dead foetus for years in comparative health; or have had it removed by abdominal or vaginal section, because of some physical disability resulting from it. But such cases rarely fall into the care of a fully competent obstetrician during the labor, and the attendant called in expects the woman to deliver herself, and waits for this event, until too late to save the foetus.

A realization of the dangers of ectopic pregnancy has given rise to a desire to arrest the development of the foetus at an early day; and after various plans have been tried, two are still considered worthy of confidence, viz., faradization or galvanism, to destroy the foetus; and excision of the entire cyst to accomplish the same end more effectually. Gynecologists are divided in opinion as to the choice to be made of the two plans, in any given case before rupture, one party claiming that electrical foeticide is not only dangerous as a method in itself, but leaves the foetus *in loco* to give subsequent trouble; and, at the same time, that extirpating the foetal cyst, generally Fallopian, can be done at a moderate degree of risk, and will leave the woman free from the foreign growth as an element of danger. The electrical advocate states that his method is devoid of danger; that the foetal mass becomes absorbed; and that the health of the woman is not endangered by the remnant of the foetal growth. He, at the same time, also regards the proposition to

exsect as one of much greater peril, and one that may in some instances be attended with insurmountable difficulties.

Whichever plan of operation is selected, it is essential that a correct diagnosis should be made, and the character of any discovered abnormal growth decided upon before it is commenced. To make a reliable differential diagnosis in a case of ectopic pregnancy is not a simple matter, and can rarely be done in a few minutes, for not only must every sensible and sympathetic sign be duly weighed, but the history of the case taken and considered in connection therewith. By these means a chain of evidence may be obtained that will show by exclusion how impossible it is that a given intrapelvic growth discovered by palpation can be other than a product of impregnation. To make such a diagnosis is much more the work of an obstetrician than of a surgical student. Mr. Tait cannot believe that this can be done in more than one case out of three; but many obstetrical observers hold a very different opinion, particularly in this country, where special studies have been made of many cases prior to rupture. This accident may occur too early to have been preceded by any symptoms to excite attention, as has twice happened in this city, where the ovum could not have been developed beyond three weeks, or between the end of one menstrual epoch and the beginning of the next one. But in the average of cases time enough is given before laceration to produce size of growth for palpation, and symptoms, sensible and sympathetic, now well known as characteristic of ectopic gestation when taken in connection with a history indicative of this condition.

Regarding the question of preference from a neutral standpoint, I am prepared to examine the two named foeticidal methods upon their relative merits as thus far exhibited, first stating my belief, that if it is morally proper to exsect the foetal mass, it is equally so to destroy the foetus *in situ*. Two important questions naturally arise, viz.: 1. Which is the more immediately dangerous—electric foeticide, or exsection of the ectopic foetal mass? 2. Is there any remote danger to be apprehended from the presence of the dead foetus? These can only be answered by a long array of facts which have not yet been produced. So far as known to me, the electric foeticidal operation has been performed in the United States and Canada forty times, with one death, and in that case a second attack of hemorrhage took place from a large superficial artery in the cyst wall, which vessel had bled nine days before until the patient bore the evidences of it. Exsection of the entire growth was certainly indicated here. Although laparotomy can be performed a great many times in succession without a death, as witness the results of ovariectomy and oöphorectomy under some operators: Is it at all likely that this more difficult and complex operation can be undertaken

with the same degree of impunity? If all ectopic foetal cysts were favorably located, and their existence discovered at an early date, no doubt a skilful operator might be able to exsect them with a moderate degree of mortality; but such is not the case, and the knife must be used at times under circumstances of great difficulty and danger. Prof. August Martin, of Berlin, advocates the exsective operation at all periods, and has performed it quite a number of times with marvellous success, even up to seven months of gestation in one case (XXI., of Table). But there are few Prof. Martin's; and ectopic mishaps will occur in places in which even the average surgical skill cannot be commanded. Theoretically, there are many reasons for preferring exsection to faradization and galvanism, and I, for one, should be glad to be convinced that the immediate removal of the foetus from the pelvic or abdominal cavity can be accomplished, even in our large cities, or at locations where skill can be commanded, with but a trifling degree of danger.

The second question can only be answered by a collective record of the subsequent medical histories of the forty-five or fifty women in whom electric-killed foetuses have become foreign bodies, to be the producers of much, little or no disturbance. That a very young foetus is capable of being almost entirely absorbed, after it has been destroyed by electricity, appears probable from careful explorations and from experiments on the lower animals; but what are the capabilities for producing injury of a dead foetus of three or four months' development? Steps will be taken by a competent investigator for ascertaining the secondary dangers experienced and present degree of health exhibited by the women in whom electrical foeticide has been performed. It may be urged that proof of the existence of a fatal growth has not been well established in many cases; but this is a question of doubt, which simply brings in dispute the ability of a number of well-known American obstetricians and gynecological practitioners to make a differential diagnosis, which they claim they can do. Many who have questioned this ability are, at the same time, advocates of the early exsective operation. Do they propose to operate upon a conjectural diagnosis, and determine the true nature of the growth by its examination after removal? It is quite possible for an abdominal surgeon of large experience to have had his attention very little directed to cases of ectopic gestation prior to rupture, and to the signs which indicate such a condition to the obstetrical observer: Is he wise in disputing the ability of men, who, by a special study and larger field of observation, claim to be able to do what he feels that he cannot? Tactile sense is of great value in abdominal surgery, but of itself is of little use in determining a growth to be of foetal origin.

Electricity and exsection are both on trial, the former in the advance from the number of tests. It has superseded the more dangerous expedients of aspiration and toxic injection, and has now only the new rival of exsection, which promises to be fully tried in the near future. We are satisfied that electricity will kill the foetus; that when dead it will diminish in size, and the fluid in the cyst be absorbed; but here we stop for the present until the subsequent history of the cases has been looked up and reported.

Thus far the innocence of the exsective operation is largely hypothetical except as to the cases of Martin and Veit, of Berlin.¹ We have in this country a number of bold abdominal operators, chiefly young men, who strongly advocate exsection, and who I hope will be able to prove by actual results the claims they have made for this inviting substitute: inviting, because it at once eradicates what electricity only destroys and retains, it may be to give trouble at a later day.

The earlier exsection is attempted, the more easy it is to perform; but when adhesions begin to form the difficulties of removal commence, and these grow and increase more and more with every additional month of development. In the later cases the abdomen must be largely incised; its cavity should be illuminated by an electric light; no parts should be peeled off or adhesions separated by the fingers; bloodvessels and vascular parts are to be tied and then cut step by step until the placenta is slowly separated. The cyst may not require such care in removal, as its adhesions may be the result of circumscribed peritonitis; but there are cases in which the cyst and its connections will be found dangerously vascular, and only to be treated as the placenta requires. The whole mass must be removed, or secondary hemorrhage will almost certainly ensue with a fatal result. Until the abdomen is opened the operator can form only a conjectural idea of the difficulties he may have to encounter, if the foetus is advanced to or beyond the fourth month, as everything will depend upon the location and vascular connections of the placenta. In the later months the operation will be little less difficult than when the foetus is at full maturity, and it may become a question whether two lives cannot be saved by waiting until the foetus is fully viable. Much will depend upon the condition of the woman, who may not be in a state of health to wait; in which event the operation should be performed at once, and the exsection made as *entire* as practicable. As the electrical advocates do not recommend their system for cases after the fourth month, exsection must be the rule, and the time of choice that which promises most favorably.

¹ Veit has operated seven times prior to rupture, and saved all of the cases. It will be of interest to know what symptoms indicated the necessity for the operations, and whether he was able to make satisfactory diagnoses before opening the abdomen.

Thus far I have directed attention to exsection by abdominal incision only; but it may not always be advisable to operate in this way, for the reason that nature may point to the vagina as a more eligible outlet. If the foetus presents by the head, behind or at the side of the cervix, and the covering parts are distended over it, this may be taken as an indication that delivery should be accomplished by vaginal incision, and, if far advanced, by the forceps. I have in my possession a record also of thirty vaginal deliveries, in only two of which was the foetus living and viable, and in both instances the child and mother were saved.¹ These thirty cases include five in which rupture into the vagina had taken place, and ten in which the foetus had been carried from eleven months to twelve years. Of the whole thirty women, twenty recovered. Six were operated upon at full term, four of the foetuses being dead, and five of the women, with the two living children already mentioned, were saved. In the two operations of Drs. King and Mathieson, in which the women and children were saved, the placenta was peeled off and removed without serious hemorrhage, a solution of perchloride of iron being applied as a styptic in the latter; but an attempt to do the same, in a pregnancy of about three and one-half months, by Prof. T. Gaillard Thomas, of New York, placed the life of the woman in great jeopardy, and he was forced to desist.²

Two forms of ectopic gestation appear distinguishable in these cases, viz., the *subperitoneal* of Dezeimeris, to which the King and Mathieson cases are believed to have belonged; and the *intraperitoneal*, also originally tubal, but developing within the pelvic peritoneum and upward in the abdominal cavity. In the latter variety there may or may not be an enveloping foetal cyst. In a case operated upon in this city by the late Dr. Albert H. Smith,³ the intestines were united to produce a form of sac, which broke open at the top, and the foetus, which had escaped, was found beneath the transverse colon; the result was fatal. In another Philadelphia case, in which the foetus was dead and weighed ten pounds, and the woman was doing well for a week, a mild antiseptic wash was used (as the discharges were slightly fetid), which entered the peritoneal cavity through an open cyst and produced violent peritonitis, resulting in rapid death. The possibility of the cyst being imperfect should oblige an operator to use only warm distilled water for intra-abdominal irrigation in these cases.

The vagina should be opened by puncture and tearing to avoid the risk of hemorrhage, or by the thermo-cautery knife, except in cases

¹ New York Repository, 1817, pp. 388-394. Transactions Obstetrical Society, London, vol. xxvi., for 1884, pp. 561-569.

² New York Medical Journal, 1875, pp. 561-569.

³ American Journal of Obstetrics, 1878, vol. xi. p. 825.

in which it has become much thinned by continued pressure, when it may be incised. As this form of operation will not admit of the subligation and exsection of the placenta for the want of space and light, it will be wiser to wait until spontaneous separation takes place.

The *primitive* operation of exsection by abdominal incision, as performed with such success by Dr. J. Veit, of Berlin, must take precedence of that made suddenly necessary by the bursting of the cyst, as introduced by Mr. Tait; for the reason that the performance of the first will prevent the possibility of an accident, which often produces death before an operation for the arrest of the hemorrhage can be performed. The contest between exsection and electricity in cases of ectopic pregnancy of two months or ten weeks standing, will in all probability end largely in favor of the former. It has become a popular measure in Germany, where the other has never met with any favor, and it may eventually be regarded as a promising method of treatment in the United States. The question of relative fatality no doubt favors the side of electricity; but there are other points to be considered, which may in a measure outweigh the danger of a fatal issue, if in the future this degree of risk be shown, as the result of a series of cases, to be of moderate measure. The antagonism between *very early exsection* and the use of electricity must in time diminish, as there must be circumstances which will lead unprejudiced operators to select one or the other method in a given case. Men of surgical inclinations will no doubt prefer the knife to electricity, and *vice versa*. The question of the possibility of diagnosis, claimed as *non-proven* by the results of electricity, will be settled beyond peradventure when the knife and the eye are brought to bear in establishing evidence.

329 SOUTH TWELFTH ST., PHILADELPHIA.

REVIEWS.

SYSTEM OF OBSTETRICS. By AMERICAN AUTHORS. Edited by BARTON COOKE HIRST, M.D., Associate Professor of Obstetrics in the University of Pennsylvania, etc. Vol. I. Illustrated with a colored plate and three hundred wood-cuts. 8vo. pp. 808. Philadelphia: Lea Brothers & Co., 1888.

It is safe to say that the statistical method in literature will hardly hold, and it is, therefore, unfair to say that four elaborate, painstaking, earnest volumes by American authors on the same subject in six years, constitute a literature. Lusk, Parvin and the *System of Obstetrics by American Authors* mean, however, more than four volumes. They imply a well-sustained energy of productive work, and prove the prevalence of a spirit of inquiry and awakened interest.

The idea of being in a certain sense American, as implied in the title, we believe to be well justified. Nationality is something more than is defined by the color of the skin and in facial expression. It is defined in the pelvis of the woman; and, sexually, from the short perineum of the African to the long perineum and high vulva of the European to those higher sexual traits of mind, we find racial differences existing with the corresponding outgrowth in the practice of obstetric art. It may be said that racially that there is no such thing as an American. We are cosmopolitan. All strains of blood are mingled to produce our peculiar people. The emotional intensity, the social life, the education, the climate, the food develop a peculiar race of women with well-defined racial traits. Three or four generations are required to graft these traits upon the emigrant stock. Obstetrically speaking, there are national differences that have made their mark upon the art if not upon the science.

In the art of obstetrics our physicians are not instrumentalists, yet here is the home of the low forceps operation. One may practise a lifetime in this country and never meet with a Tarnier forceps; but to relieve a fagged-out woman by helping a head over a perineum is nearly a routine matter. We constantly hear gynecologists say that foreign women are different from ours in the way they bear the more severe operations; but it is said half in protest, half in earnest; but we say it soberly in positive conviction that we are right and able to prove it, if this was the proper place.

In former reviews of American obstetrical works this journal has called attention to what we believe to be matters of practice peculiar to the art as it exists among us. This was more marked in Parvin's book than in that of Lusk, who was imbued with the German idea; but even in the latter's splendid volume we find many things that we may call Americanisms in practice.

The volume opens with an historical notice of obstetrics by an author especially well equipped to give the subject intelligent treatment, Dr. G. J. Englemann, of St. Louis. The author has the correct idea of the philosophy of history. It is events, not men, that make history. The man is a mere actor, who oftentimes cannot even be called a factor, for behind him lies the great accumulated current of thought and of moral force called truth, which changes the course of events in science as well as in dynasties. The truth of this underlying motive in history is proved by the science of obstetrics. Semmelweiss laid the foundation for modern antiseptic obstetrics, yet it needed a greater than he to make it the obstetric law of the world. This idea Dr. Englemann carries out in his history.

The author divides his subject into the empirical or natural obstetrics, embracing the primitive or intuitive and the religious period. This age terminates in 1550, when the second, or scientific obstetrics begins. Podalic version divides this period of enlightenment from the dark ages of the past. The author defines it as the period of development, and recognizes three stages: the podalic version described by Paré (1550); second, the obstetric forceps (1647 to 1745); and third, the development of the forceps (1745 to 1800, and the physiological period, or "perfection," as the author calls it, from 1801 to 1888). These various divisions culminate in the scientific period from 1870 to 1888. The seventy pages needed to describe the development and history of obstetrics are replete with facts and dates, and comprise one of the most carefully written sections in the book.

The second section is upon "The Physiology and Histology of Ovulation, Menstruation and Fertilization: The Development of the Embryo," by Dr. H. Newell Martin, of Baltimore. A lengthy exposition is given of the physiology and histology of the ovary, of ovulation and of menstruation. Upon these subjects the author is simply orthodox. He has given some new illustrations, which give the text a fresh appearance and are a welcome addition to the time-bound cuts with which we are so familiar in obstetrical works. The natural history of the fertilization of the ovum and the painstaking and illustrative way in which the special development of the organs is traced make very clear and interesting reading. As much of the material is gathered from original sources and from works rarely within the reach of the general reader, this addition will be a very useful one.

The editor, Dr. Hirst, disposes of the next subject: "The Fœtus; its Physiology and Pathology." The section is devoted to a review of the development, anomalies and diseases of the foetal appendages. The amniotic fluid is believed by the author to be due to both mother and child, as the experiments of Zuntz and Gusserow prove, and errors in both mother and foetus contribute to diseases of this fluid. The membrane itself, in cases of faulty development, may form amniotic bands, the cause of extensive adhesions between the amnion and the foetus which may result in serious deformities, such as eventration or anencephalus, by preventing the proper arching over of the body cavities by the foetal skin. As a singular evidence of the correlation between tissues, the composition of these bands closely resembles that of those due to plastic inflammation of serous membranes generally. In the latter part of pregnancy the amnion may burst, the life of the ovum being preserved by the sac of the chorion. The active foetal movements may roll up

the amnion into cords which become entangled with the foetus or the umbilical cord and cut off the circulation.

We will note but one morbid condition, that of syphilis of the placenta. Only as late as 1873 Fränkel gave us something definite in the histology of this condition. The deforming granular hyperplasia and hypertrophy of the placental villi were the most frequent forms of placental syphilis. These conditions had been previously described by Ercolani, without associating them with a syphilitic lesion. This infiltration of the villi with granulation cells, and their consequent increase in size and distortion, are characteristic of syphilis, and are diagnostic signs; but we may go further than this, and trace the source of the virus. If the ovum is infected through the male, the placenta, if diseased at all, will show the granulation cell infiltration of the villi. If the mother is infected during the fruitful coitus, there will be great overgrowth of the decidual cells or of the connective tissue. If the mother is syphilitic before conception, the placenta shows gummatic deposits.

The diseases of the foetus in utero, both acute and chronic, conclude the section, with considerable space given to abortion and premature labor. Parturition is given no consideration by Dr. Hirst, and it is really remarkable how closely the various authors adhere to the division of their work.

Dr. W. W. Jaggard follows upon the "Physiology of Pregnancy." He takes up the changes of a normal character upon the organs of the body, and traces them through the course of the pregnancy. Considerable space is given to uterine evolution, and the conflicting views of Müller, Bandl, Henle and others are explained with great clearness. This portion comprises, also, the diagnosis of pregnancy.

We have space but for a short quotation; that relating to the so-called Hegar's sign of pregnancy. Dr. Jaggard's description is worth remembering, because no two writers that we have seen describe either the sign or the manipulation necessary to elicit it in the same way.

"The lower uterine segment becomes softer and more compressible in contrast with the thick dense cervix below and the corpus above. These alterations are most marked in the median section of the lower uterine segment, while the borders remain relatively dense, appearing at times like cords. . . . To elicit the sign under discussion, the index finger of either hand is introduced within the rectum, while the thumb of the same hand is placed upon the vaginal portion. The index finger passes above the utero-sacral ligaments, marking the boundary between the cervix and the lower uterine segment, into the pocket of the sphincter ani-tertius. If the aperture of the sphincter ani-tertius is not readily found, one-fourth of a litre of lukewarm water injected into the rectum facilitates the search. The other hand placed upon the abdomen, presses the uterus downward against the finger in the rectum, when the lower uterine segment, the cervix and the corpus uteri can be easily touched."

Dr. Jaggard's comment upon this is a very proper one:

"Any attempt to fix the limitations and to point out the fallacies to which this sign is liable at present would be premature. The facts in our possession as to its occurrence and diagnostic significance are entirely too meagre to warrant generalizations. In passing, it may be said that Compes failed to detect the sign in one case of early pregnancy, and observed phenomena somewhat similar in cases of retroversion of the uterus. Obscure and confused notions as to the objective changes embraced under Hegar's sign have rendered invalid the conclusions of certain American authors."

In connection with what was said at the opening of this review touching some peculiarities in practice that may be regarded as Americanisms, that the high forceps operation was rarely called for in native women, but that it was a very common and growing practice to help the head over the perineum in exhausted women, we may quote the following from Dr. Jaggard:

"It is not always necessary, nor is it always expedient, to insist upon an elaborate investigation of the dimensions of the pelvis. In the United States there exists a very decided presumption that the native-born woman has a normal pelvis."

To Dr. Jaggard we are also indebted for the contribution upon "The Pathology of Pregnancy." Much valuable matter is given in a concise and readable form, and the author is to be congratulated in presenting one of the best written sections in the work.

Dr. Samuel C. Busey, of Washington, D. C., follows on the "Physiological and Clinical Phenomena of Natural Labor." The author has written a thoroughly conventional chapter. On the conduct of labor the author disposes of antiseptics in a paragraph of a dozen lines. There is no doubt about the opinion of Dr. Busey upon the subject of antiseptics. All preparations of the patient, he says,

"must be supplemented by an equally complete preparation for, and assiduous application of the principles and practices of, antiseptic midwifery. Inexcusable neglect, and inefficient and careless administration of the well-known rules and recognized appliances of obstetric antiseptics must, in view of their admitted value, be regarded as criminal."

If by "well-known" the author means generally accepted and practised, he is certainly wrong. If by "recognized appliances" he means that the methods of antiseptic obstetrics are all settled, he is equally wrong. If by "admitted value" he means that both the methods and value of antiseptics so applied are admitted generally or in equal degree, he is again wrong. This whole matter is yet on trial among thousands of medical men. It is not even the general custom in private practice. Every man who believes in antiseptic midwifery must become, in a certain sense, a missionary. He must spread the gospel of purity in the lying-in room, both public and private. Dr. Busey has not performed his whole duty in this matter. Twelve lines of advice will not convert a careless or a sceptical man to the belief and practice of antiseptics. It is methods not advice that we need. The author is contributing an important chapter to an encyclopædic work, that gave both space and opportunity for detail, and to which the reader is entitled.

Dr. R. A. F. Penrose, of Philadelphia, contributes to the "Mechanism of Labor and the Treatment of Labor based on the Mechanism." This relates to normal labor in all foetal positions in which natural forces are concerned to accomplish the expulsion of the child. It is very clearly written and well illustrated, many of the illustrations being new. The careful avoidance of any description of obstetrical operations is at times embarrassing to the author, due to the careful manner in which the editor has held his contributors in hand.

This section is concluded by the editor on the "Mechanism of the Third Stage of Labor." He says,

"In sharp contrast to our definite knowledge of the mechanical laws that govern the expulsion of the foetus stands our uncertainty in regard to the

method by which the placenta is separated from the uterus and is expelled through the birth-canal."

The Editor's theory is that the

"placenta is not separated at once, even when the foetus has entirely vacated the uterine cavity and the uterus has been very much reduced in size. The spongy placental mass can follow the retraction of the uterine wall until the solid villi are brought into actual contact with one another and the whole placenta forms a perfectly solid mass. As soon as that point is reached, the slightest additional contraction of the uterine muscle, with the smallest decrease in the area of the placental site, springs off instantly the entire placental mass, which can no longer be compressed."

The theory is a reasonable one, and in that respect is an advance on many that have been offered.

One of the most carefully and laboriously written contributions to the volume is that of Dr. J. C. Reeve, of Dayton, Ohio, "On the Use of Anæsthetics in Labor." So far as the reviewer is familiar with the subject, it forms one of the most complete monographs in the language and is particularly rich in historical references.

Dr. Theophilus Parvin concludes the volume with "Anomalies of the Forces in Labor." Errors in uterine action, tumors, pelvic distortions and various anomalies in foetal development and their relation to the mechanism of labor are presented at length, in the usual clear and careful manner of the author.

Lack of space obliges us to omit many points that deserve attention. There can be no doubt that the work will earn an important place in the literature of the subject; and if the second volume equals the first in its wide range and painstaking treatment, it will stand second to none in any language.

E. V. DE W.

REPORT ON THE MORTALITY AND VITAL STATISTICS OF THE UNITED STATES AS RETURNED AT THE TENTH CENSUS (JUNE 1, 1880). By JOHN S. BILLINGS, Surgeon, U. S. Army. Part I. 4to. pp. lxiii. 767. Washington: Government Printing Office, 1885. Part II. 4to. pp. clviii. 803. Washington: Government Printing Office, 1886.

THE present volumes, which are the eleventh and twelfth of the quarto series comprising the final report of the tenth census of the United States, are devoted entirely to the subjects of mortality and vital statistics for the year ending June 1, 1880. They have been compiled according to a scheme projected by Surgeon John S. Billings, who has with untiring zeal and industry personally supervised the work from the beginning to the end. As a result of this labor we have a report which is far superior in completeness of data and accuracy of details to any of its predecessors. That the data are still very imperfect no one knows better than Dr. Billings, who has worked most assiduously to obtain the best results possible under the existing laws governing the taking of the census.

Part I. is taken up entirely with the statistics of mortality. A deficiency in the returns of the enumerators having been anticipated,

an attempt was made to obtain a more complete record of deaths than had heretofore been furnished, by securing the voluntary coöperation of the medical profession of the country. By this effort, 61,020 deaths have been recorded, which had not been reported by the enumerators. As a further aid in accomplishing the same object, the official records of deaths in a few States and a number of cities which have registration laws have been copied and made use of instead of the data collected by the enumerators. As these data are very nearly accurate, they have also been made use of in obtaining an approximate estimate of the amount of deficiency in the enumerator's returns. Such an estimate is very necessary, for it is known that the data are very incomplete, yet scarcely more so than similar data published by other countries. It must not be inferred from this incompleteness that the census data are of little value, for they are comparable with those of foreign countries, and, moreover, they are in fact the only data procurable for parts of the country which have no registration. An accurate system cannot be obtained at once, but each census should show signs of progress, as this census does, especially in the improvement in the methods of tabulation, which being pursued will afford valuable results when more complete data are obtainable under better laws.

As already intimated, the form of tabulation differs somewhat from that of other censuses, but care has been taken in selecting the combinations to make them comparable with the statistics of other years and of other countries. The data, with certain necessary tables of ratios and proportions, are presented without attempting to draw conclusions from them, the study of the figures being left to those who are specially interested in such research.

The county has been selected as the unit of locality instead of the State, as in previous censuses, a change which permits of many interesting and useful comparisons, heretofore impracticable. Groups of counties within the limits of the State form State Groups. These are consolidated into States, and also combined into what have been called Grand Groups, having boundaries determined by topographical features and not by State lines. The reports of deaths in fifty of the largest cities have been separately compiled, in order to make possible a comparison between rural and urban mortality. These various compilations are presented in twelve tables, which, with an index, cover 767 pages.

The mortality rate of the United States for the census year is 15.09 per 1000 of surviving population, which is an increase over the death-rates of former censuses. This increase must not be regarded as representing an actual increase in the number of deaths in proportion to the living population, but rather as indicating a more complete collection of the data upon which the death-rate is based; and yet there is proof of a deficiency still existing, as is shown by a careful study of the statistics of States and cities in which the registration is probably very nearly accurate. From these and other data, Dr. Billings has calculated the proportionate amount of deficiency in the enumerator's returns, and with this correction places the death-rate for the whole country at 18 per 1000 of surviving population. The death-rate thus obtained, which is probably very nearly correct, compares favorably with that of all other civilized countries.

The remaining part of the introduction to Part I. discusses the subjects of sex in relation to deaths, relations of age to deaths, relations of

color and race, etc., to deaths, and month or season in relation to deaths. The points of interest are so concisely stated that it is impossible to abridge the matter without detracting from its value.

Part II. is by far the more interesting of the volumes on Mortality and Vital Statistics. The introduction, covering 147 pages, presents the results of a careful study of the following subjects: location in relation to births, causes of death, morbidity or sick rates, births, birth-rates and life tables, ages of living population. To these is appended a brief chapter of conclusions and recommendations. The text is illustrated by 21 handsome colored maps. Diagrams are used whenever such illustrations aid in the elucidation of the text.

The rest of the volume, 791 pages, is taken up with 54 tables furnishing data on the various subjects epitomized in the introduction. Accompanying part second is a book of plates and diagrams to illustrate approximate life tables for certain States and cities contained in volume twelfth of the census.

Consumption stands first upon the list of the principal causes of death for the census year, and then follow, in the order of their frequency, pneumonia, diphtheria, heart disease, cholera infantum and enteric fever. Scarlet fever stands eleventh on the list. It caused 16,388 deaths; of this number 8181 were males, and 8207 were females. The mean age of those reported dying of this disease in the census year was five years. Scarlet fever caused a larger proportion of deaths in the large cities than in the rest of the country. Its propagation being due to a contagion, it is not directly influenced by season or weather, locality, condition of soil or elevation of locality.

Enteric fever caused 30.19 per 1000 deaths from all causes, which is a smaller proportion than that noted in the preceding censuses. The greater part of the deaths occurred between the ages of 5 and 40 years, the mean age at death being 27 years. One fact stands out prominently, namely, that enteric fever prevails to a much less extent in cities than in other parts of the country. In the 50 largest cities, this disease caused 16.7 in each 1000 deaths from all causes, while in the rest of the country it caused 36 per 1000. August, September and October were the months in which the greatest number of deaths occurred in 31 registration cities.

The number of deaths from diphtheria largely exceeds that of the two preceding censuses, while the deaths from croup have slightly decreased. A small part of the increase of deaths from diphtheria may be attributed to the fact that physicians now report as diphtheria cases which many years ago would have been returned as croup. It is, however, very evident that diphtheria has been on the increase for several years past, especially in the northern portions of the United States. The mortality from both croup and diphtheria is greater in the rural districts than in the large cities.

Special pains has been taken to present the census data with regard to diphtheria as fully as possible. A number of colored maps showing the distribution of deaths by counties, in the northern and eastern portions of the country, convey at a glance much information on the relative prevalence of this disease in different localities, which has hitherto been defective. An examination of these maps, as Dr. Billings points out, will indicate "that the disease cannot be due to any peculiarity of climate, of geological formations, of topography or of methods of filth disposal."

The distribution of "diarrhœal diseases" is more uniform than the affections specially mentioned above. These diseases caused a greater number of deaths in the large cities than in the rural districts. This may be accounted for by the fact that the majority of deaths from these causes are among children under five years of age, and that these diseases are more prevalent among young children in large cities than in the country. In thirty-one registration districts, the greatest number of deaths occurred in the summer months, the highest mortality being reached in July.

As might be expected, consumption stands first upon the list of diseases in the order of their frequency. It caused 12,059 deaths in every 100,000 from all causes. The mean age at death was thirty-seven years. The comparison of deaths by sex shows the disease to be the more frequent in females than in males. The proportion of deaths is greatest in the large cities, and slightly greater in the colored race than in the white. The geographical distribution of consumption, as illustrated by map twelve, shows the greatest prevalence of the disease in the New England and Middle States, the Middle Atlantic Coast, the Ohio Valley, western part of Kentucky, the central part of Tennessee and on the Coast of California. The distribution of deaths is quite uniform throughout the year, though in the winter and spring months there is an excess of deaths, the maximum being reached in March.

Pneumonia, a term which probably includes a number of distinct diseases, after consumption, caused the greatest number of deaths. It is a disease of all ages, but is especially fatal in early and in advanced life. There was an excess of mortality in males, and a relatively greater mortality in the colored race. The disease was least prevalent in the coast regions, and generally more prevalent in the south and west than in the north and east. The winter and spring months were the seasons of the greatest prevalence. The proportion of deaths was greater in the rural districts than in the large cities.

The deaths from childbirth for the whole country were 3.57 per 1000 births. The mortality from this cause was greater in the rural districts than in the large cities, and about twice as great in relation to the deaths from known causes in the colored female as it is in the white. The greatest proportion of deaths from childbirth occurred at ages between twenty and twenty-five years.

Cancer, a disease which is apparently on the increase in civilized countries, has allotted to it considerable space for presenting deductions drawn from the very full data furnished by the census. It is shown that cancer is a disease which affects all ages, but the proportion of deaths increases with advancing years. Among females the proportion of deaths increases until between the ages of fifty and fifty-five years, when it reaches its maximum; among males it increases until between sixty and sixty-five years, when the proportion is greatest. The great excess of deaths from cancer in females is marked after the age of twenty, and less marked after the age of sixty-five. The tendency to cancer in the colored race is shown to be very much less than it is in the white race.

As cancer is a disease the mortality from which increases with advancing years, a large proportion of deaths from this cause in any given locality indicates to a certain extent that the locality is a healthful

and a long-settled one, and that a large proportion of the inhabitants attain advanced age. A comparison of the maps showing the geographical distribution of cancer and of old age will make this point clear.

The deaths in the whole United States for the Census year from hydrophobia were 80; from lightning, 300; and from leprosy, 16; thus showing how infrequently death takes place from these causes.

For the first time in the history of the United States Census, an attempt has been made to obtain morbidity or sick rates. A portion of the country was selected sufficiently large to give a fair indication of the relative proportion of the sick of the whole population over fifteen years of age in every 1000 living on a given day, which was June 1st. The result shows the proportion to have been 12.75 per 1000 living, which appears to be a fairly accurate proportion, judging from the data furnished from mutual benefit societies in this and other countries, and the specially reliable data of the State of Rhode Island. If the annual death rate is taken at 18 per 1000, the average number of persons above fifteen years constantly sick is 36 per 1000 of living population.

Births, birth-rates and life-tables are presented in section tenth. The total number of births collected for the census year was 1,577,173, and the birth-rate was 31.4 per 1000 of the living population. This is about 15 per cent. below the true figures, which Dr. Billings has carefully estimated to be about 36 per 1000 for the whole country. For the period, 1876-1880, the mean annual birth-rates for England and Wales was 35.4 per 1000; for the German Empire, 39.3; for Austria, 39.1; and for Denmark, 31.9. The corrected returns for the United States compare favorably with the accurate data of the countries above mentioned.

Of the total number of births, 806,866 were males, and 770,307 were females, or 1047 males to each 1000 females. The birth-rate was greater in the colored race than in the white, and highest in the southern States and in the northwest.

Approximate life-tables have been prepared for a number of cities in different parts of the country and for the States of Massachusetts and New Jersey, the method employed by Dr. Farr having been adopted. The method of Dr. Humphreys was also used in connection with the data of Massachusetts and New Jersey. From these tables diagrams have been prepared, some of them being printed on semi-transparent paper, so that, by placing them one above the other, a comparison may be made of the different localities with respect to the proportional change at each age.

An interesting and valuable table is furnished by which comparison may be made of the expectation of life thus calculated with the data furnished by the English Life-table, No. 3, that founded on the experience of 30 American Insurance Companies and the famous Carlisle tables.

Section eleventh furnishes a synopsis of the ages of living population, while in the final section, the twelfth, Dr. Billings gives his conclusions and recommendations. Attention is called to the fact that, as the country becomes more thickly settled, there is an increase of the pollution of soil and water, and a multiplication of the possible channels of communicating the contagion of specific diseases, and hence the importance of towns improving their water-supply and methods of disposal of excreta. Dr. Billings strongly recommends a uniform system of registration of deaths throughout the country, with an annual publication

of such data. He also makes valuable suggestions with respect to the methods of collecting the vital statistics of the next census, which, if carried out, will add greatly to the value of the data furnished by this branch of the census.

W. H. F.

A GUIDE TO THE PRACTICAL EXAMINATION OF URINE. FOR THE USE OF PHYSICIANS AND STUDENTS. By JAMES TYSON, M.D., Professor of Pathology and Morbid Anatomy in the University of Pennsylvania, etc. Sixth edition, revised and corrected. With a colored plate and wood engravings. Philadelphia: P. Blakiston, Son & Co., 1888.

IN the latest edition of this well-known manual, the author has brought it fully abreast of the times, and it is now, as before, *facile princeps* among books of its kind. Too much praise cannot be given for the judicial calm exercised in advocating the use of well-tried and trustworthy methods for the detection of albumin, at a period when every day brings a new one, only to occupy valuable time and then disappear. The addition of the phenyl-hydrazin test for glucose is a valuable one. Having used the test in the modification given by Dr. Tyson for two years, we have found its simplicity and certainty all that can be desired. In regard to tests for bile-coloring matter, we have found that Huppert's test (*Arch. der Heilkunde*, 8, 351 and 476) reveals minimal quantities after Gmelin's and Heller's have both failed.

G. D.

THE PRINCIPLES OF THEORETICAL CHEMISTRY, WITH SPECIAL REFERENCE TO THE CONSTITUTION OF CHEMICAL COMPOUNDS. By IRA REMSEN, Professor of Chemistry in the Johns Hopkins University. Third edition, enlarged and thoroughly revised. 12mo. pp. 318. Philadelphia: Lea Brothers & Co., 1887.

THE author does not assume too much when he takes the popularity of his book as an evidence of the growing appreciation for theoretical chemistry. By this and other works of his, notably his *Organic Chemistry*, he has done much to inspire students with a desire to know more of the philosophical principles of chemistry than ordinary text-books afford. Besides many minor additions, the reader familiar with the second edition notes entirely new chapters on chemical affinity and on the connection between constitution and chemical conduct.

No part of the general subject is so important as *valence*. In order to make the book fairly representative of the best thinking on *valence*, the old chapter with that heading has been rewritten and amplified. We know no book on the subject which in a brief compass gives a statement of chemical principles so lucid and complete.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF
FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS IN HARVARD UNIVERSITY.

METHYLAL, A HYPNOTIC IN MENTAL DISEASE.

This substance was first introduced by PERSONALI (*Progrès Médicale*, July 2, 1887, No. 27). On animals it had both physiological, sleep-producing and toxic effects, ending in coma and paralysis with acceleration of pulse and respiration. Like paraldehyde and most hypnotics, it is eliminated by the lungs; it controls convulsions and is antagonistic to strychnia. MAIRET ET COMBEMALE found that gr. lxxv- \bar{z} ij were necessary to produce sleep, and that it was of value in chronic mental cases, but not in acute; that the effect was exhausted in six or eight days, but a few days' rest made it active again. It is relatively all the more valuable because in mental cases few hypnotics are to be depended upon; chloral, especially, in these observers' experience, is often disappointing.

The dose is given in sweetened water at bedtime. The analysis of cases is minute and the number of groups large, but it suffices to say that the results in general were good, except in acute mania. Special advantages are its solubility, pleasant taste and innocuousness. The authors consider it "justly superior to chloral, urethan and opium preparations." — *L'encéphal*, 1888, No. 3, p. 281.

SULPHONAL AS A HYPNOTIC.

The agreement among observers as to the unqualified merit of sulphonal is certainly remarkable. In addition to the original articles referred to in the July number of this journal, accounts of its use may be found as follows: Langgard u. Rabow, *Ther. Monatshefte*, May, 1888; Salgo, *Wiener med. Wochenschrift*, No. 20; Rosin, *Berlin. klin. Wochenschrift*, No. 18; Cestreicher, *Ibid.*; Cramer, *Münch. med. Wochenschrift*, June 12, 1888, p. 395; Schwalbe, *Deutsche med. Wochenschrift*, June 21, 1888, p. 499; Rosenbach, *Berlin. klin. Wochenschrift*, June 11, p. 481.

CESTREICHER finds it somewhat slower in action than the other hypnotics

and advises its administration several hours before bedtime—nevertheless, he finds it very reliable, and recommends it especially for mental cases. Cramer's experiments wholly lie with this class. In 407 trials on 92 mental patients he had positive success in 92.6 per cent., the administration being followed by sleep of five or more hours, commencing for the most part in half an hour. He saw no bad results, though in one case \mathfrak{zj} in six days, and in two others gr. xlv daily for two months were given.

SCHWALBE's paper is the most exhaustive, and his trials very carefully conducted. Out of 50 patients, in 66 per cent. a prompt and satisfactory action was obtained; in 24 per cent. the result was relatively poor, and in 10 per cent. negative. The patients had varied diseases, but analysis shows the important fact that in 24 cases of purely nervous insomnia success was complete in 90.3 per cent. On the contrary, when the primary affection determined the sleeplessness, the test was satisfactory in only 44.4 per cent. of cases. Schwalbe concludes from this, in agreement with Kast, the original observer, that sulphonal is purely a hypnotic and not a *narcotic*; that it has the power to quiet the excited brain and restore the equilibrium, if disturbed by a minor influence only (*e.g.*, a *slight* amount of pain), but retains this power only within narrow limits. Unlike morphine, it does not first diminish pain before sleep, nor in cases of cough did it diminish the tendency thereto during sleep. Schwalbe found it of no effect in cardiac dyspnoea, contrary to the experience of Kast (amylen hydrate, on the other hand, Schwalbe found to produce sleep in these cases, or at least an improvement in the dyspnoea). In twelve per cent. of cases, slight ill-effects were produced, of which the most constant were headache and vertigo, but nothing of importance. No serious after-effect was observed. In children the success was especially well marked. Schwalbe's dose was gr. xv– \mathfrak{zss} ; in children, gr. iv.

WARMING MEDICINES BEFORE ADMINISTRATION.

LEWIN (*Berliner klinische Wochenschrift*) recommends the warming of medicines before administering and of subcutaneous solutions as well. The absorption, he points out, is much quicker and the dose necessarily smaller.

SALICYLATE OF BISMUTH.

This preparation is said to combine the astringent properties of bismuth and the disinfecting worth of salicylate, and has been administered by EHRLING (*Archiv f. Kinderheilkunde*, ix. p. 90) to a great many children with digestive disturbances. It proved itself a most excellent remedy in gastro-intestinal catarrhs depending essentially upon abnormal fermentation, especially if combined with lavage of stomach and intestines. It was given in the following mixture:

Bismuthi salicylat.	.	.	.	.	.	.	.	.	\mathfrak{zj} .
Glycerin.	.	.	.	.	.	.	.	.	\mathfrak{zss} .
Aquæ .	.	.	.	.	.	.	.	q. s. ut ft.	\mathfrak{ziv} .

One drachm every two hours, more or less according to age of child.

Taken as a powder it is apt to cause some gastric irritation; in one per cent. of cases a slight salicylate eruption appeared. Ehrling thinks the remedy

ought to be of use in cystitis and ammoniacal urine, since the urine after seventeen hours shows increased acidity and decomposes less readily.

ACETANILIDE—ANTIFEBRINE.

These two substances are identical, but SQUIBB (*Ephemeris*, vol. iii. No. 3) observes that the name antifebrine is controlled by patent, and consequently the price is enhanced. Acetanilide costs only half as much as antifebrine and one-eighth as much as antipyrine.

SACCHARIN.

According to the latest analysis, saccharin is a white powder, showing under the microscope a crystalline form and soluble in eighty per cent. alcohol or in hot water. It does not reduce Fehling's solution. It suffers no change in the system, and its elimination by the urine commences in half an hour (*Deut. med. Zeit.*, February 23, 1888, p. 197). The substance was first obtained in 1879 from coal-tar, and, on account of its intense sweetness (two hundred and eighty times that of sugar—one to two grains sweeten a cup of coffee), has come to be liberally used in manufactures—*e. g.*, beer.

In medicine its chief uses have been in diabetes, in place of cane sugar and as a corrigent. It has been looked upon as an indifferent substance in its effect on the system. Thus, PROF. MOSSO gave it in large quantities to animals without damaging results, and gr. lxxv in men produced no bad effects. SALKOWSKI (*Virchow's Archiv*, cv. p. 46) confirmed its innocuousness. STADELMAN, employing it on eleven patients, in doses of grs. l to grs. lxxv, found it harmless in nine, while in two others it caused severe gastric disturbance. PROF. LEYDEN, on the other hand, saw no ill results in a pretty extensive use of it in small doses of grs. ijss to grs. iij. Recently DR. WORMS, in a paper read before the Paris Academy of Medicine (*La Tribune Méd.*, May 13, 1888, p. 234), has reviewed the question and presented it in not quite so favorable a light. Used by five diabetics in the dose of gr. ss twice a day, it could not be borne in three of the cases longer than eight or ten days, but then caused loss of appetite, nausea, severe gastric pains and a sweet taste in the mouth. The reviewer emphasizes the need of further physiological study of saccharin, and looks upon the previous clean record as largely in the nature of certificates for the benefit of manufacturing chemists!

Saccharin has antiseptic properties, and Mosso noticed the fact that the urine of animals taking it kept longer. LITTLE (*Dublin Journal of Medical Science*, June, 1888, p. 493) has reported his use of it in ammoniacal urine dependent on paralysis of the bladder, on stricture or on prostatic disease. The results were highly satisfactory in a series of half a dozen cases. In one case of multiple calculi, in an old lady in which operation was refused, the urine, which had been intolerably putrid for three months, became non-ammoniacal and sweet in three or four days, and continued so. Little has not found it upsetting to the stomach; in fact, he emphasizes this point of advantage over other drugs given to improve the urine.

EICHHORST (quoted in *Münch. med. Wochsft.*, July 10, p. 478) in the treatment of diabetes, finds saccharin of much worth, but warns against its use in

too large quantities, as it easily produces an unpleasant after-taste, nausea and disgust for the medicine.

DOSE OF ACONITIA—A WARNING.

The Pharmaceutical Society of Paris (*Presse med. Belge*, April 22, 1888, p. 135) sounds a note of caution in the use of *aconitia*. Numerous accidents from it were reported, though no notice of them had appeared in public print, and the alkaloid was declared perhaps the most violent poison known. Gr. $\frac{1}{40}$ (the usual dose of Duquesnel's *aconitia*) had produced in an adult dangerous symptoms. Granules of this strength were condemned, and it was recommended to dispense those of a strength of gr. $\frac{1}{60}$! in order rightly to proportion the dose. Digitalin was also declared powerful for evil and its dose too large.

COCAINE IN GENERAL ANÆSTHESIA.

HOLGER-RÖRDAM, of Copenhagen (*Schmidt's Jahrb.*, 1888, ii. p. 35), uses gr. j of cocaine, injected five minutes before commencing anæsthesia with chloroform, and claims for it that narcosis results much quicker, that the stage of excitement is wanting and that less chloroform is needed. No bad effects were observed either during or after the anæsthetic.

OXYCYANIDE OF MERCURY THE BEST OF ANTISEPTICS.

Compared with corrosive chloride (*Comptes rend. d. Soc. d. Biol.*, July 6, 1888, p. 585):

1. Its solution has a slightly alkaline reaction and precipitates albumin only slightly.
2. It is less irritant than solutions of sublimate.
3. There is less absorption by tissues than in case of sublimate.
4. Solution $\frac{1}{300}$ th does not attack, except slightly, the materials used in surgical instruments.
5. Tested by its power of keeping soup, the antiseptic power showed itself six times greater than that of the bichloride.
6. Tested by the power to destroy the micrococcus pyogenes aureus, the advantage was slightly in favor of bichloride, $\frac{1}{300}$ th to $\frac{1}{3000}$ th.
7. Employed on suppurating surfaces or to render a mucous surface antiseptic, it furnishes much better results because of the tolerance by tissues and of feeble absorption.

The cyanide of mercury has about the same properties, but the oxycyanide is more powerful against the micrococcus pyogenes aureus.

CREOLIN AS ANTISEPTIC AND ANTIPARASITIC FOR THE INTESTINE.

HILLER, of Breslau, writing in the *Deutsch. med. Wochenschrift*, July 5, 1888, speaks in the most unqualified terms of praise in regard to creolin. In ammoniacal urine, washing out the bladder with $\frac{1}{300}$ th has given good results. Its properties as an antizymotic, its harmlessness and its non-irritating nature combine to make it the best of antiseptics for the gastro-intestinal tract. Hiller has accordingly used it in very many cases of catarrh, flatulence, meteorism,

etc., with gratifying success. The dose has been gr. v-xv, usually t. i. d., an hour after meals, in thick gelatin capsules (thin capsules are acted upon by the creolin). The taste is tarry and disagreeable. In no case has he observed bad effects, and he has given as much as gr. cl in four days. A slight sensation of warmth and some taste in mouth after half an hour were the only sensations observed. Foulness of feces is corrected, diarrhœa diminishes and distention of abdomen disappears. Twice it was efficient as a vermifuge. Creolin is not soluble in water nor in gastro-intestinal juices; but of the *emulsion* which is formed Hiller believes that absorption would be slight.

[Creolin is a coal-tar product. The latest analysis (*Deutsche med. Zeitschrift*, May 24, 1888, p. 516) makes it a compound mixture of carbolate of sodium, a resin soap, a fat soap and a hydrate of sodium.—ED.]

ANTISEPTIC ACTION OF CHLOROFORM WATER.

This useful property of chloroform is well illustrated in the *Deutsche med. Wochenschrift*, Heft 19. PROF. SALKOWSKI calls attention to the powerful antiseptic properties of chloroform water, which he extols in no mistakable terms. Having used it for years to prevent the decomposition of urine, special experiments have shown him that, if the chloroform be kept from evaporating, it stops all fermentative processes conditioned upon the vital activity of microorganisms; thus, milk keeps for months its original neutral and alkaline reaction. Solutions of cane and grape sugars, mixed with yeast, do not ferment. Albuminous solutions, meat-juice keep perfectly sterile; while ordinary solutions, used for purposes of control, showed bacteria in two days. It is, too, a disinfectant as well as an antiseptic. Very stinking meat-juice, shaken with chloroform water, was sterile after one hour's standing. Anthrax bacilli were innocuous after twenty-four hours' contact, and a culture of cholera comma bacillus was made inert in a minute.

From this experimental evidence Salkowski draws the following practical hints and urges experimental trial of chloroform water:

1. Chloroform water in the laboratory is a decidedly superior agent to add to all ferment solutions, albuminous fluids, extracts, etc.; it is far ahead of any other antiseptic. Here its volatility is of great advantage, permitting its removal by heat or air current when necessary. To preserve urine unchanged it is of great value. In urine already alkaline chloroform will not act on the *soluble* ferment present.

2. For the preservation of smaller anatomical preparations; the only drawback is its taking up the blood coloring matter, a difficulty which further experience may obviate.

3. In therapeutics as a solvent for alkaloids in solutions; subcutaneous injection, for the irritating effects of the chloroform are slight. With so few antiseptics of disinfection of the alimentary canal among our resources, this adaptation of it should be borne in mind.

Animals bear very large quantities (a dog got for four days in succession $\frac{1}{2}$ viij in his food, without any effect). In cholera it should certainly be tried. Exceptionally in emergencies it might be used as an external antiseptic, though inferior to others. Its easy preparation (m℥xxv + (75!), shaken in a quart of water) is a recommendation.

[This proportion of chloroform is rather large, as about 1 part of chloroform to 200 of water is as much as will dissolve.—ED.]

A similar laudatory estimate of the value of chloroform in pharmacy for the preservation of extracts, making solutions of drugs, etc., may be found in the *American Journal of Pharmacy*, May, 1888, p. 248.

UNNA (*Monatsh. f. prakt. Dermat.*, 1888, Heft 9), on the recommendation of Hager, has used aqua chloroformi as a vehicle for subcutaneous solutions. He finds it to serve its purpose in preserving the solutions, while the chloroform, though it causes a slight burning sensation in the morphia solution, is of advantage through its anæsthetic properties in such solutions as that of ergotin and in Fowler's. For these he recommends it especially.

INTERNAL ANTISEPSIS.

BAGINSKY (*Deut. med. Woch.*, May 17, 1888), in an article on fermentative processes in the alimentary canal of children, points out that the question is by no means so simple as the mere presence of bacteria and getting rid of them; *e. g.*, he has shown that the bacterium lactis (for which he substitutes the name bacterium aceticum) normally present in the intestine destroys a pathological bacterium found in green diarrhœa—in other words that “a powerful antibacterial treatment, even if it were successful in the destruction of germs, as it is not, can under circumstances be a damage, because it interferes in the independent extermination fight of different forms of bacteria.”

ANTISEPTIC TREATMENT OF TYPHOID.

LEGROUX (*Le Bull. Méd.*, June 17, p. 805) has used the following treatment in a large series of cases and believes in it. To all cases a good dose of calomel is first given, then if diarrhœa is prominent—

Naphthol	} āā gr. xl.
Bismuth	

Make ten powders and give one every hour in capsule or suspended in milk. If less diarrhœa, naphthol alone in same dose.

If tendency to constipation—

Naphthol	.	.	.	.	.	.	.	.	gr. xl.
Magnes. salicylat.	.	.	.	.	.	.	.	.	gr. xl.

Ten powders as before.

Legroux finds in this treatment numerous advantages, both local and general, as, *e. g.*, disinfection of stools, diminution of meteorism and believes it affects favorably the course of the disease.

ACTION OF CARLSBAD WATER ON THE GASTRIC FUNCTIONS.

SANDBERG and EWALD (*Centralblatt f. d. med. Wissensch.*, Nos. 16 and 18, 1888) have determined by a series of experiments the effects of Carlsbad water on the functions of the stomach.

For this purpose ten persons (of whom but three suffered from indigestion) were subjected to treatment, which consisted in administering water from the

Mühlbrunn spring, in quantities varying from a half pint to a pint and a half and at temperatures ranging between 68° and 122° F., for from thirty to thirty-six days. The effects were determined by examining the contents of the stomach removed by the stomach tube.

The results obtained, as will be seen, deviate very materially from those of Jaworski, who found that the continued use of Carlsbad water caused a diminution of both the hydrochloric acid and the pepsin of the gastric juice, and that finally the sensibility of the gastric mucous membrane became so far diminished that even the introduction of food was frequently insufficient to stimulate it to secretion.

A summary of their results is as follows:

1. Carlsbad water is a powerful gastric stimulant, so much so that half an hour after its ingestion it is often possible to demonstrate the presence of hydrochloric acid in the stomach contents.

2. After a four to five weeks' course of treatment no diminution in the secretion of pepsin could be noticed.

3. The same is true of the rennet (milk-curdling) ferment.

4. In those cases in which, before treatment, the acidity was rather below normal, the secretion of pepsin and of rennet was increased.

5. Carlsbad water stimulates gastric activity more powerfully than common water of the same temperature.

6. Absorption occurs very quickly; a half pint disappearing in fifteen to forty-five minutes.

7. Absorption takes place more rapidly at temperatures of from 122° to 131° F., than at lower ones of 68° to 104° F.

CAFFEINE SUBCUTANEOUSLY AS A CARDIAC TONIC.

HEUCHARD (*Le Bull. Méd.*, May 27, p. 705) gives the preference to caffeine over any cardiac stimulant for the relief of heart weakness dependent on any peripheral condition as—*e. g.*, pneumonia. It has these advantages: that its action is rapid, its elimination quick and that it is harmless. Digitalis (so commonly used in America) is too slow, requiring three to four days for its action. Caffeine acts in three ways: 1. General tonic; 2. Cardiac tonic; 3. Diuretic. Heuchard uses it also in all adynamic states, it displacing ether in his estimation.

Formula:

Sod. benzoat.	3
Caffeine	2
Aq. destill.	6

Give four to six syringefuls.

GENERAL ANTIDOTE FOR ANY POISON OF UNKNOWN NATURE.

Magnes. ust.	}	Equal parts with sufficient water.
Carbon. lig.			
Ferri. oxid. hydrat.			

—*Pharm. Rundschau.*

MEDICINE.

UNDER THE CHARGE OF

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THE TREATMENT OF TYPHOID FEVER BY CARBOLIC ACID.

SIDNEY GRAMSHAW (*Lancet*, 1888, i. 1243) reports his results with this drug, used after Rothe's method, in one hundred and sixteen cases of typhoid fever during the last seven years. The general management of the cases consisted in the administration principally of a diet of milk and of a mixture containing one and a half minims of pure carbolic acid and two minims of tincture of iodine every four hours for the first fortnight, or until the urgent symptoms yielded, then three times a day. The good effect is manifest almost immediately, and it sometimes happens that a case is cut short almost as quickly as is acute rheumatism by salicylic acid. Brandy and champagne are given if needed. Beef-tea is avoided during the fever, as it is apt to produce diarrhoea. The carbolic acid can be perceived in the breath and perspiration, but rarely causes carboloria. If it induces vomiting, the dose should be diminished. Only one of the one hundred and sixteen cases died, and this from pneumonia after the fever had disappeared. Though very numerous cases recover absolutely without treatment, the author thinks it certainly safer and more advisable to use such means as will at once put the patient on the road to convalescence; and his cases show that carbolic acid will do this.

PERIPHERAL NEURITIS IN ACUTE RHEUMATISM AND THE RELATION OF MUSCULAR ATROPHY TO AFFECTIONS OF THE JOINTS.

JUDSON S. BURY (*Manchester Medical Chronicle*, 1888, viii. 182) devotes his attention to the consideration of certain phenomena frequently met with during or subsequently to an attack of acute articular rheumatism, but which have received but little attention from writers; namely, the paralysis and atrophy of muscles, anæsthesia in the course of the peripheral nerves, and enlargement of the ends of the bones. After reviewing the literature of the subject, and reporting eleven cases illustrated by woodcuts, the author draws the following conclusions:

1. That in articular rheumatism we constantly meet with the muscular atrophy and paresis common to other joint affections. Their sudden onset would indicate that they are due to a reflex irritation conducted along the sensory nerves from the joint to the cord, and which appears to inhibit the functional activity of the motor cells in the anterior horns. Their duration and progressive character suggest organic changes, either central or peripheral. The presence of increased reflexes, sometimes of contractures, and the fact

that rarely a lateral sclerosis may start from an arthritic attack indicate that the pyramidal tract or its connections may be involved as well as the motor cells.

2. That wasting of the interosseous muscles of the hand is one of the commonest phenomena of acute, subacute or chronic rheumatism; and that while some cases may be due to the reflex irritation described, in a large number the atrophy is the result of an ulnar neuritis; as is proved by the distribution of the wasting in the hand.

3. That although the ulnar nerve is by far the commonest to be affected, other nerves of the brachial plexus, and branches of the lumbar and sacral plexuses are frequently attacked.

4. These peripheral nerve symptoms may occur in a limb quite free from joint irritation. If then there are found paralysis, atrophy or anæsthesia in the course of the ulnar nerve during an attack of rheumatism, or after the pyrexia has subsided, in a limb where the joints are free, it would appear very probable that there existed a neuritis set up by the rheumatic poison. This is rendered still more likely by the evidence found by Pitres and Vailard of the very common occurrence in phthisis, tabes and typhoid fever of neuritis in regions of the body in which during life symptoms of such neuritis were but slight.

CASCARA SAGRADA IN RHEUMATISM.

GOODWIN (*New York Med. Journ.*, 1888, xlvii. 629) calls attention to what he claims is the almost specific action of this substance in certain forms of rheumatism. His first experience was in his own person when suffering from acute rheumatism, when he found that ten drops of the fluid extract taken three times a day as a laxative removed the rheumatic pains completely in a short time. Since this event he has used the drug in about thirty cases and has obtained the most satisfactory results, except in a few instances in which there was a syphilitic taint. The initial dose employed was fifteen minims thrice daily, and it was rarely necessary to increase this amount. The beneficial effects usually occurred within twenty-four hours. In a few cases it has opened the bowels too freely. The author suggests that if this happens a preparation of iron should be administered separately at the same time.

BIRTH PALSIES.

Injuries to the nervous system during birth, says GOWERS (*Lancet*, 1888, i. 709, 759), may occur to the peripheral nerves or to the brain; and one case is reported of a spinal birth palsy. The peripheral form is usually seen in the facial nerve or in the nerves of the arm. The former is due to the pressure of forceps, the latter either to the same pressure in front of the trapezius, to that of a traction hook above the shoulder in breech presentations, or to a fracture of the humerus. But the commonest and most important form is the cerebral birth palsy. That this is due to an injury received during birth, is shown by the fact that almost all cases have been instances of difficult parturition, often terminated by the forceps. Of twenty-six cases of this affection of which the author has notes, the child was a first-born in sixteen, and in six of the others the head was delivered last. The external signs of severe

pressure from the forceps are often to be seen, and sometimes convulsions in the first few days of life indicate the morbid state of the brain. Further autopsies show the lesions of cerebral hemorrhage, usually situated at the convexity of the brain.

Among the symptoms may be often noted a blood tumor of the scalp. There may be apparent death, or general convulsions and rigidity. In slighter cases it is only when the child should begin to walk and talk that a rigidity of the legs is discovered and usually spasmodic, athetoid or choreiform movements of the arms, with a degree of incoördination. Inability to support the head, curvature of the spine, strabismus and difficulty in articulation and swallowing are sometimes present, and mental defect is common. The disorder is usually bilateral, but sometimes limited chiefly to one arm. Very commonly the arms escape, and there is adductor spasm of the legs with cross-legged progression. Recurring convulsions are sometimes seen, and may continue as a form of epilepsy. The preponderance of the affection of the legs is due to the fact that their centre is situated nearer the middle line and the point of greatest compression then is the arm centre. The difficulty in swallowing, and the retraction of the head are probably caused by hemorrhage in the region of the medulla. It is likely that many cases of epilepsy and of mental defect are due to slight damage to the brain during birth.

The diagnosis of the malady rarely presents much difficulty. The most important distinctions from other cerebral diseases are that there is no history of a definite onset at any time after birth, and that the condition is not progressive. These two features distinguish it from tumor of the pons producing bilateral weakness and spasm. Accidental hemiplegia occurring during infancy may resemble one-sided birth palsy, but there is usually a distinct history of acute symptoms at the onset. Moreover, even in the apparently unilateral birth palsy, there is almost invariably some slight disturbance of the same kind as that on the affected side. In the cases in which the legs suffer much more than the arms, the diagnosis from cases of spinal spastic paralysis is difficult. Still in the birth palsy traces of the disorder will be found in the parts which appear at first sight to be free. The movements of the hands are distinctly awkward, and differ from those of a healthy child. Then, too, the case is probably one of birth palsy if there is no history of definite onset, and the child has never been able to walk; since chronic disease of the spinal cord is almost unknown in childhood. When the weakness of the legs is slight, the gait somewhat awkward, the muscles large and firm, and the calf-muscles somewhat contracted, the case may be mistaken for one of pseudo-hypertrophic muscular paralysis. It is, however, distinguished from the latter by the absence of the characteristic condition of the muscles around the shoulder, the fact that the contraction can be overcome, and the presence of exaggerated reflexes and of reflex spasm on cutaneous stimulation.

As regards the prognosis, the tendency is toward slow improvement, particularly slow in the first half of childhood. In almost all cases in which there is not actual idiocy, the patient ultimately *learns* to control the muscles and to walk, though in severe cases the gait almost always preserves more or less peculiarity. The hands also become steadier in time. No opinion can be given as to the mental condition until the second year of life is passed, when the prognosis will be guided by the amount of defect discovered.

Treatment consists in training the motor powers by rhythmical gymnastic exercises, in checking any tendency to epileptiform seizures and in employing instrumental support if necessary. Operation for talipes is never justified, as there is no permanent shortening of the muscle. Electricity is useless.

MUSCULAR ATROPHIES AND HYPERTROPHIES.

LANDON CARTER GRAY (*New York Med. Journ.*, 1888, xlvii. 533) says that disease of any part of the neuro-muscular apparatus—i. e., the muscles, the motor nerves and the ganglion cells of the anterior column of the gray matter, is apt to extend to the two other parts or to be associated with them. This apparatus begins with the centres in the third ventricle and terminates with the motor end-plates in the muscle. There are reasons to believe that the ganglion cells of the anterior columns are of two kinds, determining either motor paralysis or wasting of the muscular fibre as the first and predominant symptom. Nevertheless, in every case of disease of this region of the cord, there are, sooner or later, both muscular atrophy and motor paralysis. Disease of any part of the neuro-muscular apparatus produces the three symptoms: 1, motor paralysis; 2, muscular atrophy; 3, electrical changes, brought about by degeneration of nerve and muscle. It is easy to understand, then, why there is so much dispute as to which part of the apparatus is affected when these three symptoms are present. As the nervous system can only express itself through the muscles, it is the muscles that we are to study in all diseases of the neuro-muscular apparatus.

The disorders of this apparatus are known as: 1. Myelitis of the anterior cornua. 2. Glosso-labio laryngeal paralysis or bulbar paralysis. 3. Progressive ophthalmoplegia. 4. Muscular pseudo-hypertrophy. 5. Progressive muscular atrophy. The first three are due to lesions of the anterior column, consisting principally of destruction of the ganglion cells, with subsequent atrophy of the muscles and nerves; the fourth is of muscular origin; the fifth may be due to spinal or to muscular lesions, or to both. 1. *Myelitis of the anterior horns* is a lesion in the anterior gray matter of the cord. It produces an acute, subacute or chronic paralysis of the extremities, followed by atrophy and altered electrical reactions of the muscles. In children it is usually confined to one limb; in adults it is generally in the form of paraplegia. It is most common in the first three years of life and between the ages of eighteen and forty. 2. *Glosso-labio-laryngeal paralysis* is due to implication of the nuclei of the hypoglossal, facial and spinal accessory nerves in the medulla. It is a paralysis usually preceded by atrophy affecting, in order, the tongue, the lips and lower part of the face and finally the larynx, pharynx, œsophagus and heart. There is difficulty in the pronunciation of the tongue and lip sounds. 3. *Progressive ophthalmoplegia* is caused by an affection of the nuclei of the ocular nerves in the floor of the aqueduct of Sylvius and the third ventricle. The muscles involved are sometimes the internal (sphincter of the pupil and tensor of the choroid), sometimes the external and sometimes partially both. 4. *Muscular pseudo-hypertrophy* is a disease of early childhood, beginning with falls and increasing weakness. There is a deposit of fat around the muscular fibres, especially of the lower extremities. The arms and shoulders are usually affected simultaneously, and the contrast be-

tween the atrophy of the parts and the apparent hypertrophy of the legs is very striking.

Progressive muscular atrophy is a disease about which there has been much confusion, increased by the effort to form many different "types." We may accept four types: *a. The hand type*, which begins with the muscles of the thumb and fingers, producing the "ape hand" or the "claw hand," often after a long time extends up the arm involving certain muscles in a regular order and sooner or later attacks the trunk and possibly the nuclei in the medulla. *b. The juvenile type* (Erb), in which the onset is almost always in the muscles of the shoulder and upper arm, less often in those of the pelvis and lower extremities. *c. The infantile facial type* (Landouzy and Dôjérine), which generally begins with an atrophy of the muscles of expression; with the lips and eyes protruding, the brow like ivory, the motions of the lips incomplete. When the face is wasted, the muscles of the shoulder and arm are next involved, certain of them usually remaining intact. *d. The peroneal type* (Charcot, Marie and Tooth), in which the muscles of the leg are first attacked, then those of the hand and those of the forearm some years later. The author gives a table stating exactly which muscles are diseased in each type. The course of progressive muscular atrophy is gradual and the duration from five to thirty years. The paralysis is usually proportionate to the atrophy. Sometimes pseudo-hypertrophy is conjoined with the muscular atrophy. It would seem that most cases are of central origin, but a few are clearly muscular.

As regards diagnosis, the presence of the three symptoms alluded to is absolute proof of the existence of disease of the neuro-muscular apparatus. The various forms are then to be distinguished from one another. When the lesion is in the anterior columns, there are the symptoms peculiar to one of the three diseases first described. The diagnosis of disease of the muscles alone can only be positively made in muscular pseudo-hypertrophy and in the infantile facial type of progressive muscular atrophy. It has been claimed, but it is not certain, that the "hand type" is always of central origin, or that the "juvenile type" is uniform and purely muscular. Fibrillary contractions and the reaction of degeneration occur in both central and peripheral forms. Other diseases of the spinal cord and its membranes might extend into the anterior horn and are to be distinguished from these under discussion by the presence of their characteristic symptoms, as well as of marked sensory, vesical and rectal disturbances. Such diseases are spinal hemorrhage, transverse myelitis, syringo-myelitis and locomotor ataxia. Neuritis is distinguished by the presence of pain, œdema and hot, glossy skin; and multiple neuritis by pain and steady progress of the bilateral paralysis and atrophy within a week or two, while the pain persists. Lead paralysis, meningitis and atrophy from joint disease should be easily differentiated.

The most frequent causes of the neuro-muscular diseases are infection, heredity, muscular strain, trauma, acute diseases, exposure to continuous cold or warm weather. Heredity is usually found in the infantile facial and plays an important role in all forms. Progressive muscular atrophy often follows the acute diseases.

The prognosis varies. There is always an incurable residue in myelitis of the anterior horn, bulbar palsy is always fatal and progressive ophthalmo-

plegia usually so. Muscular pseudo-hypertrophy is incurable. Progressive muscular atrophy usually runs a fatal course, but it is possible that the purely muscular forms may be amenable to treatment.

Treatment.—Rest, sometimes in bed, is of prime importance in every case of muscle or nerve degeneration. The faradic, galvanic and, in cases of great atrophy, the static electrical currents are to be applied to the spinal cord, the motor nerves and the muscles themselves. Massage, used gently and not long at a time, is sometimes useful, but may prove harmful. Drugs are of little use except in the acute or subacute form of myelitis of the anterior horn and in progressive ophthalmoplegia. Iodide of potash, ergot and strychnia may be employed, but the author has never seen any tangible results from them.

PLEURISY AS A PREDISPOSING CAUSE OF PHTHISIS PULMONALIS.

WESTBROOK (*N. Y. Med. Journ.*, 1888, xlvii. 617) says that, admitting the tubercle bacillus as the undoubted exciting cause of phthisis, the question arises regarding the existence of local or general predisposing pathological conditions. Pleurisy would seem to be capable of producing a vulnerability of the lung tissue, though in some instances it is probably merely an indication of constitutional weakness. Pleurisy is, at any rate, often observed as an antecedent of phthisis, but the exact relation of the two has been much discussed. These cases may be divided into five classes:

1. Those in which a pleurisy with effusion occurring in a person with good health is immediately followed by rapidly progressing pulmonary tuberculosis. The pleural inflammation in these cases is undoubtedly of tubercular origin.
2. Cases of sero-fibrinous pleurisy, followed by a slow development of chronic interstitial pneumonia. This pulmonary inflammation may be tubercular in its origin, but the final development of distinct tuberculosis is at any rate to be looked for.
3. Cases of sero-fibrinous pleurisy ending in recovery, but followed after some months by the development of tuberculosis at one or both apices. These are usually observed in persons constitutionally weak or whose health has been impaired. That the pleurisy was itself tubercular is possible, but rendered improbable by its occurrence in the lower part of the chest, while the tuberculosis which subsequently develops is
4. Cases occurring in middle or advanced life, in which a sero-fibrinous pleurisy has become chronic, with deposits of false membrane, through neglect or failure to recognize the disease. Many of these finally develop *tuberculosis pulmonum*, but the interval is so great that the pleurisy cannot but be regarded as primary and simple in its character.
5. Cases in which an empyema antedates the tuberculosis.

The author reports numerous instances illustrative of these classes and draws the following conclusions:

- a. Sero-fibrinous pleurisies, apparently of simple origin and terminating in complete recovery, may be followed, after a lapse of a few months, by the development of phthisis pulmonalis.
- b. In all probability the pleurisy in these cases acts as the predisposing cause of the tuberculosis.

c. Primary sero-fibrinous pleurisy may result in fibroid phthisis with the subsequent occurrence of tuberculosis pulmonum.

d. Fluid effusions remaining in the chest for a long time may, finally, so interfere with the nutrition of the lungs or of the body at large as to render it liable to general or local tubercular infection.

e. No case of pleurisy should, therefore, be neglected, but great care should be taken that after apparent recovery the health is completely restored. For at least a year the physician should keep a watch over the patient and should order prolonged rest from business, change of climate, etc. In patients who have reached middle life and whose costal cartilages have begun to lose their elasticity, effusions should not be allowed to remain in the chest more than two or three weeks and should be aspirated at short intervals, if the fluid reaccumulates. If dulness and feeble respiratory murmur continue after the fluid is absorbed, tonics and alteratives should be persevered with for a long time. The regular employment of gymnastic exercises and the inhalation of compressed air are great aids in reëxpanding the chest.



CARDIAC DEGENERATION FROM THE PRESSURE OF ABDOMINAL TUMORS.

BEDFORD FENWICK (*Lancet*, 1888, i. 1015, 1067) enumerates the various causes of degeneration of the heart muscle and says that no attention has been drawn to the fact that the pressure of abdominal tumors may produce the same effect. He reports twenty-two cases, chiefly of ovarian cystic diseases, in most of which sudden death occurred, and in which the muscular fibres were found to have undergone fatty degeneration. He concludes: 1, that the sudden death which occurs in cases of ovarian cystic disease is often, if not always, caused by fatty degeneration of the heart. 2. The long-continued upward pressure of intra-abdominal tumors is almost certainly a cause of fatty infiltration and degeneration of the heart muscle. 3. The cystic forms of tumor are those which most commonly exercise this morbid change; perhaps, because they can exercise a greater pressure on the thoracic cavity, for a longer time without killing the patient, than a solid tumor could do. Pregnancy, it is true, is a kind of cystic growth; but it does not produce this change in the heart muscle, because it exerts considerable pressure for but a very short time. Then, too, by a provision of nature, the heart hypertrophies to meet the dangerous results of pressure thrown upon it by the pregnant uterus.

The diagnosis of this condition of the heart is difficult, but is based upon the pathological conditions present. 1. The heart's impulse is very feeble and diffused, the sounds dull, especially over the right ventricle, and the first sound, perhaps, inaudible. 2. The radial pulse is feeble, small and compressible. Its rate may be slow or rapid and irregular, but in either case a very important symptom is that on the slightest exertion there is an unusual though temporary acceleration of the pulse. 3. There is a tendency to local anemias and local congestions, pallor of the skin, faintness and even syncope, a constant inclination to yawn or sigh and, possibly, a marked condition of dyspnœa. The diagnosis is aided if the age of the patient is over forty, if she has wasted and has been compelled to lead a sedentary life and if the pressure has been kept up for over nine months.

Treatment should be directed toward improving the nutrition of the cardiac muscle, while paying regard to the general health. Regular exercise, even a little at a time, is all-important, and in view of the dangers to the heart, the early removal of the tumor should be advocated, or, if this is not practicable, tapping should be resorted to.

HYPODERMATIC USE OF NITROGLYCERIN IN HEART FAILURE.

FUSSELL (*Med. and Surg. Report.*, 1888, lviii. 695) reports three cases of heart failure in all of which death seemed imminent. The first patient was a case of mitral disease, subject at times to the usual symptoms of general venous congestion. She had been taking nitroglycerin by the mouth, and had been feeling unusually well, when she was suddenly seized in the night with intense dyspnœa, and soon became unconscious, while the lungs were filled with bubbling râles. Two drops of a one per cent. solution of nitroglycerin were administered hypodermatically, though the case was considered hopeless. In twenty minutes the dose was repeated, and in the course of an hour the patient could talk and lie down without trouble, and the râles had almost completely disappeared from the lungs.

A second case was one of syncope and sudden heart failure in the course of typhoid fever. The face was cyanosed, and the pulse irregular and so rapid that it could not be counted. The drug in this instance had an equally good effect. The third patient, one suffering from mitral disease, was relieved from suddenly developing symptoms of extreme cardiac insufficiency by two drops of a solution of the drug, followed by one drop more in half an hour.

The author highly recommends this plan of treatment on account of its superiority to the hypodermatic use of whiskey or digitalis, both in certainty and rapidity of action.

BRACHYCARDIA.

In a long article on brachycardia, or retardation of the pulse, GROB (*Deutsch. Arch. f. klin. Med.*, 1888, xlii. 574) reports a number of cases from his own experience, and collects others from the literature, making 140 in all, of which 131 were males. He divides the subject into physiological, idiopathic and symptomatic brachycardia, and reports instances of each. The first includes those cases in which there is slowness of the pulse without symptoms in healthy individuals, or independently of the disease from which they may be suffering. It is also seen in healthy women in the puerperal state, or after abortions. Those fasting likewise exhibit the same phenomenon.

Idiopathic brachycardia is that which occurs with its attendant symptoms as an independent disease, without any discoverable lesion of any organ of the body. It sometimes follows the ingestion of indigestible articles of food, depressing mental condition, extreme exhaustion, great pain, or nervous shock. It may be considered a cardiac neurosis, and may be transitory or more lasting. The third group, the symptomatic, is by far the largest, and includes all those cases in which the temporary retardation of pulse is the result of some other disease. The diseases causally related to the 122 cases of symptomatic brachycardia which the author reports from his own experience and that of others, are as follows: Articular rheumatism, 27 cases; diseases of the circu-

latory apparatus, 16 cases; diseases of the digestive tract, 14 cases; diseases of the central nervous organs and of the peripheral nerves, 9 cases; chronic infectious and constitutional diseases, 9 cases; convalescence after acute febrile disorders, 43 cases. The retardation of the pulse in rheumatism appears to be due to the influence of the poison upon the heart. In diseases of the heart it may occur under a variety of conditions, one of the most frequently reported being fatty degeneration of the organ. Among nervous affections which may produce retardation of the pulse are both simple and tubercular meningitis, as well as *pachymeningitis hemorrhagica* in some cases, the first stages of apoplexia cerebri, syncope and apparent death, increased intracranial pressure, especially of the medulla oblongata, produced by tumors or in other ways, occasionally injuries of the upper part of the spinal cord, diseases of the peripheral nerves, as illustrated by some cases of sciatica, diseases of the cardiac nerves themselves, exceptionally Basedow's disease instead of causing the usual acceleration.

Brachycardia in diseases of the digestive tract, produced by reflex action through the vagus or splanchnic, is seen in indigestion, long-continuing constipation and icterus. The author has also seen it in a case of carcinoma oesophagi, one of carcinoma ventriculi, one of ulcer ventriculi and in two cases of typhlitis. Chronic infectious and constitutional diseases producing quite marked but temporary brachycardia, are represented in his experience chiefly by cases of gonorrhœa and soft chancre, all of them complicated by epididymitis or by bubo, and further by a case of anemia. In convalescence from the acute febrile diseases it is seen especially after typhoid fever, but is also reported after typhus, diphtheria, pneumonia, measles and scarlatina. It is also to be remarked that in rare instances the pulse is retarded during the fever, to reach its normal frequency during convalescence.

Certain symptoms not infrequently attend the retardation of pulse, among which may be mentioned fainting, extreme oppression, epileptiform or apoplectiform attacks, vertigo and attacks of weakness.

A CASE OF ICTERUS GRAVIS; ACUTE CIRRHOSIS OF THE LIVER.

KOERNER (*Deutsch. Archiv f. klin. med.*, 1888, xlii. 615) reports an interesting case, in which, after a sudden onset with headache, vomiting and weakness without known cause, icterus developed and was attended by bleeding from the nose and gums, headache, extreme restlessness, eructations, bad taste in the mouth, icteric urine, general pain and some tendency to stupor. The liver was very tender to pressure and somewhat swollen. Later the stupor deepened, the swelling of the liver grew less, the urine contained leucin and tyrosin, the temperature arose suddenly to over 104°, and the patient died with the symptoms of acute pulmonary oedema after an illness of twelve days. The autopsy showed the liver to be of nearly normal size, and, for the most part, of an ochre-yellow color. Under the microscope there were found the evidences of an acute inflammation of the connective tissue of the organ, with compression and atrophy of the liver cells, but without any signs of the primary degeneration of the glandular structure of acute yellow atrophy.

SURGERY.

 UNDER THE CHARGE OF

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IODOFORM TAMPONADE.

DR. EMIL SENGER (*Deutsch. medicin. Woch.*, No. 24), in his Annual Retrospect of Surgery, says: The iodoform tamponade is to-day used in many clinics, and is especially applicable to wounds, of the absolute sterility of which the operator cannot be assured. At the time of operation the wound is packed with iodoform gauze, the sutures are inserted, but not tied, and the wound is dressed antiseptically; if on withdrawing the tampon the wound is found free from reaction, the surfaces are approximated and the sutures knotted. Helferich groups the cases which especially indicate this method of treatment under four heads. He urges its adoption in the surgical treatment of: 1, tuberculosis; 2, all septic wounds; 3, bleeding; 4, diseases of the intestinal or genital tract.

SKIN TRANSPLANTATION.

THIERSCH presented to the Deutsch. Gesellschaft für Chirurg. (*Beilage zum Centralblatt für Chirurgie*, No. 24, 1888) two cases of extensive skin transplantation. The first, suffering from a superficial carcinoma of the forehead, the size of the palm and involving the bone, underwent an operation, by which the whole diseased area was removed, including the pericranium and affected bone. A small surface of dura mater was exposed near the root of the nose. Since transplanted skin will not adhere to compact bone, the borders of the opening were freshened by means of a hammer and chisel. The bleeding was entirely checked by pressure and the wound covered in by long and moderately broad flaps. In ten days it was entirely healed, except in a few spots where the freshening of the bone was neglected. Three weeks later the whole wound was granulating, the skin having disappeared, and three new cancerous nodes were seen in the surrounding skin. The nodes were removed, the granulations scraped, the whole surface was again covered with transplanted skin, and permanent healing quickly followed.

The second patient was suffering from a malignant ulceration of the left side of the face. The cheek and lower eyelid were mostly destroyed; also the lateral surface of the nose, the inner commissure of the eyelids, and the inner half of the upper eyelid; the cavities of the mouth and nose were both opened. Extirpation of the diseased area, including the eyeball and affected bone was performed. Since the transplantation of isolated pieces of skin upon raw surfaces which communicate with mucous membrane cavities is not successful, the wound was closed by a flap, the size of the palm, taken from the frontal and temporal regions, preserving in front of the ear a root about the

breadth of two fingers. The gap in the fronto-temporal region was completely covered in by strips of skin. Both wounds were entirely healed in eight days.

In both cases sterilized salt solution (6 : 1000) and sterilized dressings were used in the operation and after treatment. Thiersch prefers moist to dry dressings.

THE PROGNOSIS OF CANCEROUS AFFECTIONS.

FISCHER, in 1881 (*Deutsch. Zeitschrift für Chirurg.*, xiv. Bd.), published the statistics of Professor Rose's cases of malignant disease operated on in the Zurich Canton Hospital and in private practice from 1867 to 1878; in all, 298 cases. Leaving out the private cases, 42 in number, there were living at the time Fischer's article appeared 98 patients.

In the interest of a more thorough knowledge as to the ultimate prognosis of malignant diseases MEYER reports (*Ibid.*, xxviii. Bd. 10, 2 Heft) the result of his investigation into the subsequent history of these cases.

Of the 98 patients, definite knowledge could be obtained of 64. 22 are still living and free from recidivity. 19 died from causes not connected with their original disease; of this number, 6 perished within three years of the operation, the remaining 13 at periods varying from 4 to 16 years.

Of the 22 patients still living, 11 suffered from carcinoma, 7 from sarcoma, 1 from melano-sarcoma, 1 from carcinoma-sarcomatodes, 2 from cysto-sarcoma.

In all these cases, the diagnosis had been confirmed by microscopical examination.

OHREN (*Archiv für klinisch. Chirurg.*, xxxvii. Bd., Heft. 2) gives the statistics of 72 cases of cancer involving the face, the lips excepted; of these, 3 died shortly after the operation, 20 from recidivity, 7 are suffering from a return of the disease, 8 died from causes other than cancer, 23 still live and exhibit no sign of recidivity. Of these 23 cured cases, three years or more have elapsed since the operation in 9 only. Many of these cases exhibited advanced disease requiring ablation of extensive areas of soft parts and free chiselling of bone. Ohren confirms Thiersch's observation that "the interval between operation and recidivity becomes shorter with each succeeding operation."

EXTIRPATION OF THE SPLEEN.

FEHLEISEN reports two cases of total extirpation of the spleen for echinococcus cysts (*Deutsch. medicin. Wochenschrift*, No. 24, 1888). The first was operated on in November, 1886, by von Bergmann. The diagnosis lay between a large and very movable cyst or a wandering spleen. The patient recovered promptly from the operation. At no time has there been any enlargement of the glands or alteration in the blood. The patient is well and able-bodied. The second case was operated on in February, 1888. It ran an apyretic course, and, at the time of reporting, the wound was entirely healed.

EXCISION OF A DISLOCATED SPLEEN AND SUBSEQUENT EXPECTORATION OF THE LIGATURE OF THE PEDICLE.

MCGRAW reports (*The Medical Record*, vol. 33, No. 26) a case of splenectomy, remarkable both in its history and sequel. The patient, æt. forty, suffered

from malaria for two years; subsequently received a violent blow in the side, which confined her to bed for three weeks; then noticed a movable tumor in the lower part of the abdomen, which grew for a time and was accompanied by paroxysms of colicky pain, together with suppression of menses. This continued for seven months, when the menses reappeared. There was an interval of nine years in which the tumor ceased to grow and the patient suffered from no distressing symptoms. In 1886, the pain returning, the patient sought medical aid.

On examination, a tumor of semi-solid consistency was found filling the whole iliac fossa and extending about an inch over the median line to the left. It pressed the uterus and bladder far to the left and filled up the right side of the true pelvis to within two inches of the outlet—immovable, not yielding to pressure nor changing in position.

An exploratory incision, two inches long, midway between the pubis and the navel showed that the tumor was not attached to either uterus or ovary. On enlarging the incision no adhesions were found, the tumor being simply wedged in between the bones of the pelvis and the pelvic contents. A fuller examination proved the growth to be an enlarged and dislocated spleen, with a very long pedicle. It was turned out, the pedicle transfixed and tied, one-half at a time, the thread being finally knotted about the whole; apyretic course for one week; pain in left shoulder. Albumin shortly appeared in the urine, the temperature rose and the patient suffered from pleuro-pneumonia of the lower lobe of the left lung; in four weeks from the onset of the pneumonia, convalescent; the only troublesome symptom remaining was a persistent pain in front of the left shoulder. The pain continued, together with a troublesome cough and finally some hemorrhages, for about nine months, when the ligature applied to the spleen pedicle, still exhibiting the knots originally tied, was coughed up. This was followed by disappearance of cough and cessation of the shoulder pain.

For several months after the operation the number of white corpuscles was increased, the blood containing six times as many in proportion to the red, as healthy blood. Later the proportion became normal.

McGraw records another case of splenectomy, undertaken on account of an enormous tumor which filled up the abdomen to such an extent as to make enbreathing difficult. The spleen had contracted adhesions both to the abdominal parietes and to the diaphragm; the separation of the latter was attended by free and persistent hemorrhage. A vein in the pedicle was also ruptured, but was secured by ligature.

The bleeding from the diaphragm could not be controlled, and caused death two and a half hours after the operation.

THE OPERATIVE TREATMENT OF SEPARATION OF THE ABDOMINAL PARIETES FOLLOWING LAPAROTOMY.

R. CHROBAK (*Internat. klin. Rundschau*, 1887, Nos. 44 and 45) remarks that bandages and supports are by no means satisfactory in the treatment of the occasionally enormous hernias which appear at the seat of laparotomy wounds; nor is excision of the superfluous skin successful in giving permanent relief.

Chrobak has operated upon two cases with complete success. The cure was

radical, the convalescence uninterrupted and rapid. He divides the thin skin together with the peritoneum; the latter is immediately sutured. The superfluous skin is resected, and all fat and connective tissue down to the sheath of the recti muscles is dissected away. By means of strong sutures penetrating not only the sheaths but the muscular substance also, the diastasis is obliterated. A small drainage tube is placed in the wound and the skin is sutured.

Maydl has operated upon several cases in a similar manner; he splits the sheaths of the two recti muscles and unites the sheaths and the muscles of the two sides separately to each other.

GASTROENTEROSTOMY.

LAUENSTEIN (*Centralblatt für Chirurg.*, No. 26, 1888) records a case of gastroenterostomy for carcinomatous obstruction of the pylorus, which terminated fatally from the physiological exclusion of the greater part of the small intestine, a loop of ileum within sixteen inches of the ileocolic valve having been opened and stitched to the stomach. The patient, æt. sixty-five years, suffered from pain in the stomach for several years; from vomiting and constipation for some months. On examination a slightly movable tumor, the size of a small apple, was found lying near the umbilicus when the stomach was empty; carried up to the lower border of the ribs on the right side when food was taken. The gastric juice contained only a trace of hydrochloric acid. On opening the abdomen the pyloric tumor was found surrounded by a number of enlarged glands matted together. Gastroenterostomy was decided upon; a moderately full loop of small intestine, lying directly under the transverse colon, was drawn out and touched with crystals of sodium chloride. A distinct vermiform motion was shortly perceived passing from left to right, which Nothnagel regarded as reversed peristalsis.

An opening about two inches long was made in the bowel and stomach, and apposition maintained by two circles of continued, silk suture. The opening in the stomach was three fingers' breadth from the border of the carcinomatous tissue and one finger's breadth above the greater curvature. The operation lasted one hour.

No symptoms arose the first two days, except vomiting of bile, which was repeated three times. Nutritious enemata at first; after two days bouillon, milk and wine were given by the mouth, beginning with teaspoonful doses. Forthwith and till death, nine days later, appeared copious watery evacuations, dark brown in color and extremely feculent in odor. Meat appeared per rectum practically unchanged one-half hour after it had been taken into the stomach; there was evidently entire lack of either digestion or absorption, and the patient perished from inanition eleven days after the operation. On section, the intestine was found to pass in the opposite direction to that indicated by Nothnagel's test. The opening in the small intestine lay about sixteen inches from the ileocolic valve, the fistula was patulous to the thumb, well formed, round and covered through its whole extent with mucous membrane. The physiologically excluded intestines were empty and contracted.

In such cases Lauenstein advises careful search for a loop of the jejunum, which should be stitched to the stomach; this is to be preferred, even though

a larger abdominal wound be required. He also advises that the gut and stomach should be united by one posterior row of sutures before the opening is made.

EXTIRPATION OF A CANCER OF THE LARGE INTESTINE.

VON BERGMANN (*Deutsch. medicin. Wochenschr.*, No. 24, 1888) reports a remarkable case of intestinal cancer successfully treated by operation. The seat of disease was the descending colon at the beginning of the sigmoid flexure; the nodulated tumor was closely adherent to the concavity of the ileum. On laparotomy and exposure of the diseased area, a second intestinal loop, supposed to be small intestine, was found so firmly matted to the mass that it could not be separated, but, with the diseased colon, was resected. This resection involved also a large piece of the mesocolon which had become involved in the primary growth or its lymphatic extension, and many ligatures were necessarily applied to check the very free bleeding. The continuity of the healthy intestine which had been resected simply on account of tight adhesions, was restored by a circular intestinal suture; the two ends of the colon, however, after the cancer-bearing portion had been cut away, were stitched to the external wound, making an artificial anus.

On the second day after the operation, high temperature, tympanites, pain and vomiting pointed to the development of peritonitis. The wound was opened again and the resected ends of intestine, which had been sutured together, were drawn out. A portion near the line of suture was discolored and clearly gangrenous; the thread was removed and both ends secured to the external wound; the latter now contained four intestinal lumina. The general condition of the patient improved, pain and swelling disappeared, the wound suppurated. Almost four weeks later a gangrenous piece of intestine nearly a foot long was discharged. The suppuration diminished, and there remained simply an artificial anus, about the size of a silver dollar, from which folds of prolapsed mucous membrane projected.

In March, when an examination of this opening was made with a view to its closure, in place of four intestinal openings but two were found, separated from each other by a thick partition wall. This was explained by the fact that both loops of resected intestine were from the colon; the portion between the two resections having sloughed, probably on account of its circulation being cut off by the many ligatures applied while removing the diseased mesocolon, was discharged *en masse*, and left only the extreme upper and lower intestinal extremities adherent to the surface wound.

EXTIRPATION OF THE RECTUM.

BARDENHEUER exhibited his method of operating to a number of the members of the Surgical Congress (*Beilage zum Centralblatt für Chirurg.*, No. 24, 1888). The patient was an old woman suffering from a cancer extending to the breadth of several fingers above the sphincter.

Operation.—Dorsal position, with elevation of the buttocks. The incision in the middle line exposed the coccyx and lower portion of the sacrum; removal of the latter by means of the bone forceps. The sphincter was not divided. The unopened rectum was freed from adhesions by means of tearing

with the fingers and blunt instruments, a provisional ligature was placed in the healthy parts above and below, and the tumor was excised. After closure of a peritoneal rent made while isolating the tumor, the continuity of the bowel was again restored by suturing the upper and lower ends together. The sacral wound was left open, the cavity about the rectum being carefully tamponaded with iodoform and iodide of bismuth gauze, and a thick rubber-tube was placed in the rectum.

The duration of the operation was thirty minutes. Bardenheuer has operated in this manner upon thirteen cases, losing two; one from exhaustion in twenty-four hours, one from the rectum being constricted in a rent of Douglas's pouch and becoming gangrenous.

KÖNIG (*loc. cit.*) subjects his patients to a preparatory course lasting from four to eight days, thoroughly emptying the bowels and withholding food which leaves much detritus. A posterior central incision is made and the bowel torn loose with the finger, often high above the peritoneal attachment. All involved lymphatic glands are removed. The wound is thoroughly washed out with antiseptics (carbolic or salicylic solution), sprinkled with iodoform and either packed with iodoform gauze, after the insertion of a few sutures, or drained by means of numerous deep sutures passing to the rectal walls.

Of the sixty cases operated upon, twenty-four per cent. died; ten per cent. remained cured after three years; eighteen per cent. after two years. Three patients suffered from recidivity after they had remained well for upward of three years.

In regard to the function of the new rectum, of twenty-one patients examined, but six were able to retain their feces; three suffered also from stenosis.

VON BERGMANN (*loc. cit.*) considers that the danger of rectum extirpation is very much lessened, and prefers this procedure to colotomy; he mentions Bramann's success in this operation—of twenty-seven cases, twenty-six recovering.

HEMORRHOIDS.

MR. WHITEHEAD describes (*British Medical Journal*, February 26, 1887) an operative procedure for the radical cure of hemorrhoids which he has employed in upward of three hundred cases, with complete success in the sequel and such a favorable course during treatment that in no instance have symptoms arisen which have given him cause for serious anxiety. The operation consists in thoroughly paralyzing the sphincters by digital stretching; dividing the mucous membrane around the entire circumference of the anus, a short distance from its junction with the skin, by means of scissors and dissecting forceps, and dissecting the whole diseased or pile-bearing area from the external and internal sphincter until healthy mucous membrane is reached, when it is drawn down and stitched to the skin, the hemorrhoidal mass being removed.

ALLINGHAM (*Medical Press*, June 27, 1888) finds the chief disadvantages of this method to consist in "the lax and irregular condition of the anus and the resultant trouble in separating the mucous membrane from the skin; the time required in twisting the vessels in bad cases and the length of the operation."

To obviate these difficulties he has devised an instrument with four arms,

each of which seizes the mucous membrane at its junction with the skin, and can be made to separate from its fellows by means of a screw, converting the anus into a square-looking aperture. The line of incision separating skin from mucous membrane is now clearly defined, and by using the instrument as a handle the parts can be held in the most favorable position for rapid dissection up to the internal sphincter. Opposite the position of each large pile a thread is passed through the skin around the stems of the pile, brought out through the skin again and tied tight enough to prevent hemorrhage. The drawn-out pile area is cut off just in front of the ligatures, the mucous membrane is sutured to the skin and the parts powdered with iodoform.

WEIR reports (*The Medical Record*, vol. xxxiii., No. 26, 1888) six severe cases of hemorrhoids treated by the Whitehead method. In all, the results were satisfactory. The convalescence was rapid and the cure complete. In regard to the choice of operative procedure, he says:

"While for less severe cases of hemorrhoids the operation of injection with carbolic acid (and preferably with the 1 : 20 solution) is to be first thought of, and while for the more decided form of this disease Allingham's method (ligation) yet stands unequalled, yet for extensive conditions of hemorrhoidal disease which have been hitherto treated by tying off three, four, and sometimes more masses, I believe that greater efficacy and greater permanence of cure will be accomplished by the resort to Whitehead's method, and that less after-discomfort to the patient will be felt than by the well-known method of ligation."

FRACTURE OF THE SKULL.

Three cases of trephining for fracture of the skull, associated with a wound of the middle meningeal artery, are reported by BRUNNER (*Correspondenz Blatt für schweitz. Aerzte*, No. 12, 1888).

1. Compound, comminuted, depressed fracture of the skull. Laceration of the dura mater and brain substance. Rupture of the middle meningeal artery, with external bleeding.

The portion of the brain involved in the laceration was included in the lower part of the ascending parietal and superior temporal convolution. The scalp was shaved and washed with ether, soap and sublimate solution 1 : 1000. The wound was enlarged, and hair, bone, splinters and torn brain tissue were carefully washed and picked from its depth. The bleeding which came from the anterior branch of the middle meningeal could not be reached directly and was checked by iodoform gauze tamponade. Drainage, strict antisepsis, uninterrupted recovery. Neither before nor after operation was there loss of consciousness, disturbance of sensibility or paralysis. Two years afterward the patient was without symptoms and entirely able-bodied.

2. Compound, comminuted, depressed fracture of the skull, with laceration of the dura, escape of brain substance and rupture of the anterior branch of the middle meningeal artery; external bleeding.

External wound, one and three-quarters inches long, extending from a point three inches from the root of the nose and one and three-quarters inches from the central line to about the origin of the attolens aurem muscle. On enlarging, an area of bone, equal in size to the palm of the hand, was found comminuted and driven in upon the brain substance.

Patient semiconscious, paralysis of the left side of face and of the right arm and leg, the latter not well marked; involuntary passage of urine and feces. Clots, fragments of bone, hair, and torn brain substance were removed. To check bleeding thoroughly the bone was chiselled away until the main branch of the anterior meningeal artery was exposed, when a curved needle armed with a ligature was passed around it. Immediately after the operation consciousness returned and the patient was able to move the right arm and leg. Prompt healing of the wound and disappearance of brain symptoms.

3. Comminuted fracture of the left parietal bone, not compound. Rupture of the middle meningeal artery. Supradural hæmatoma. Crossed paralysis. Trephining and removal of the exudate. Death from pneumonia.

In this case the symptoms usually considered as diagnostic, *i. e.*, 1, an interval of freedom from marked symptoms after an injury; 2, gradual development of hemiplegia; 3, the typical pressure pulse; 4, stertorous respiration; 5, signs of a head injury, were all present. The skull was trephined at Krönlein's point of election, *i. e.*, the crossing of a horizontal line passing backward from the supraorbital margin and a vertical line extending upward from immediately behind the mastoid process. The clot was found to lie anterior to this opening. A second trephine opening was made at Vogt's point (middle meningeal), the clot cleared away and the bleeding checked. No immediate change in symptoms; gradually the sensibility returned and power of motion. Death on the seventh day from lobular pneumonia.

BARDELEBEN reports (*Deutsch. medicin. Woch.*, No. 24) a case of comminuted fracture of the skull, in which the wound lay directly over the centres for speech, facial expression (except the eye) and the motion of the forearm. Several hours after the extraction of some bone splinters the patient regained consciousness. The second day was characterized by an increase in the disturbance of speech and paralysis of face and forearm. On the evening of the third day the right arm and leg were suddenly affected with spasms lasting five minutes. These spasms recurred at intervals during the next five days, involving the arm and face, and, finally, the face alone. All symptoms gradually ameliorated, till, in four weeks from the operation, some weakness of the right hand was the only motor trace of the injury left.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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A NEW PRACTICAL OPHTHALMOMETER.

In the February number of the *Revue d'Ophthalmologie*, LEROY and DUBOIS describe an ophthalmometer which they claim to be capable of furnishing more correct results than the well-known instrument of Javal, and which,

besides, has the advantage of being very considerably cheaper. Since the introduction of Javal's ophthalmometer many points of interest have been studied in connection with the different relations existing in different cases between the amounts of corneal and lenticular astigmatism. The instrument has also proved useful as a means of following the changes in corneal curvature which take place after operations, etc. Such an ophthalmometer, though hardly a necessary addition to the requirements of the practical ophthalmic surgeon, is yet so easily worked that it can undoubtedly lay claim to being a practical instrument.

In Leroy and Dubois's ophthalmometer a definite size of corneal image (0.044 inch) is taken, as well as a definite distance of object and image, and from the size of object corresponding to this image the calculation is made, once and for all, of the corresponding radius of curvature and consequently of the refractive power of the cornea. The image is known to be of a definite size when exactly double by an arrangement similar to that used by Helmholtz, and the distance is regulated by the focus of the telescope which carries the object the image of which is reflected from the cornea. This object is a graduated horizontal bar, at either end of which, and about eight inches apart, is a sight, one of which is divided into rectangular marks, alternately black and white and 0.196 inch in breadth. All that is necessary in making a measurement, after the instrument has been got into position, is to observe which of these rectangular intervals of the one sight exactly covers the sight on the other side, when the image on the cornea is doubled, and then to read off the number corresponding to the position of the rectangle, a number which is given in dioptries. A reading taken from any two meridians at right angles will thus give the value of the corneal astigmatism. The meridians of greatest and least curvature, which determine the position required for the axis of the correcting glass, are found in the following way: having discovered the difference in the refraction of the cornea in any two meridians at right angles to each other, that meridian is found the image of which corresponds to an object intermediate in size between the first two. The meridians of greatest and least curvature lie at angles of 45° to either side of this meridian.

CONJUNCTIVITIS ÆSTIVALIS.

An important paper on spring catarrh is contributed by HANSEN GRUT in the first number of the new Scandinavian ophthalmological journal (*Nordisk Ophthalmologisk Tidsskrift*), of which he is the editor. The subject is very indifferently treated in the text-books. The following is a *résumé* of Grut's description:

The affection begins in spring or summer with subjective symptoms similar to those of an ordinary conjunctivitis, though there is but little increase in the secretions. Generally there is a circumscribed injection of the peri-corneal vessels and in this situation small gray, semi-transparent, nodules of a cartilaginous consistency make their appearance. Often there are no distinct nodules, but a continuous and swollen infiltration at one part of the conjunctiva surrounding the cornea. The swelling, though it may to some extent overlap the cornea, is always clearly defined, and the cornea remains per-

factly clear, while the immediately surrounding portions of the conjunctiva assume a whitish appearance. The accompanying objective and subjective symptoms are subject to exacerbations and remissions during the course of the disease. They diminish in the autumn, the infiltrations flatten down or disappear, leaving, however, a certain degree of opacity just at the border of the cornea; the following spring the attacks recur and this state of matters may continue for years.

The form just described is the mildest and seems to be the best known. Often on everting the lids the surface of the tarsus, especially of the upper lid, is found to be whitish, as if covered with a thin layer of milk. In more severe cases the tarsal portion of the conjunctiva of the upper lid is covered with flattened granulations, the edges of which lie close up to each other. By pinching up the everted lid from side to side the separate granulations come into prominence, showing too the deep furrows which exist between them. A thin probe can then be passed in under them, so that they can be shown to be mushroom-shaped, each being perched on a narrow pedicle. The granulations cause the eyelids to droop, and the appearance at first sight closely resembles that met with in trachoma. These flattened granulations are the most characteristic changes in the severer cases and, although they do not altogether disappear in winter, they are subject to the same exacerbations as are met with in the conjunctival swellings surrounding the cornea.

Hansen Grut believes that the disease is often mistaken for trachoma and gives the following points of differences by which they are clinically sharply defined: the trachomatous granulations never lose their rounded surface and are not separated by deep furrows, whereas those of spring catarrh are flattened and separated by furrows. Trachoma leads to cicatricial changes, deep-seated linear cicatrices. The infiltration in trachoma passes into the tarsus, leading to alterations in its shape, to trichiasis and to entropion. This *never* occurs in the case of the granulations characteristic of spring catarrh; when the disease, after many years' duration, has disappeared the conjunctiva is left smooth and whitish, but is not the seat of any actual cicatricial formation and the tarsus retains its form. A long-continued trachoma is almost always associated with pannus. In spring catarrh, on the other hand, the cornea is never affected. This is of prognostic importance and, besides, interesting as showing that trachomatous pannus has not a mechanical origin—that is, is not set up by the friction of the uneven surface of the lid on the cornea. This is more especially evident from the fact that the spring catarrh granulations are much harder and often more massive than those found in trachoma. The granulations never appear on the lower lid.

Notwithstanding the great chronicity of spring catarrh and its rebelliousness to any treatment, cases are occasionally met with in which all the changes disappear in an almost incredibly short space of time without leaving a trace. An instance of this is cited: a case which had been under the writer's treatment since 1866, in which, after puerperal fever, which occurred many years afterward, there was a complete cure, although massive granulations had existed for sixteen to eighteen years. The granulations differ also anatomically from the trachomatous form and consist mainly of a hyperplasia of the superficial elements of the conjunctiva. The affection is always bilateral and is met with in children and in adults under thirty-five years.

With reference to the name "spring catarrh" the following remark may be quoted: "It has been generally supposed that the disease has an intimate connection with the warmer seasons of the year and comes and goes with those seasons; hence its name. I have already mentioned that the granulations, at all events, do not disappear in the winter. It is doubtful, indeed, if the summer exacerbation, which certainly takes place, is the most characteristic phenomenon in connection with the affection. The same holds good of other chronic diseases of the conjunctiva. Phlyctenular conjunctivitis flourishes in spring and summer; the severe exacerbations of trachoma also take place during the warmest summer weather. Heat, with dry air and dust, is certainly irritating to a mucous membrane disposed to inflammation."

The treatment recommended is the destruction of the granulations with the thermo-cautery; sulphate of copper and nitrate of silver do harm.

TRAUMATIC PARALYSIS OF THE SIXTH NERVE.

PURTSCHER has made a very exhaustive examination of the literature of traumatic paralysis of the sixth nerve, a report of which he gives in the June number of the *Archiv für Augenheilkunde*. The cases are classified in different ways, according to the nature of the complications caused by the injury which has given rise to the adducens paralysis. Traumatic paralysis of the sixth is rare in comparison with the frequency of injuries to the skull, though relatively common as an isolated paralysis. Bilateral paralysis is much more frequent in the traumatic than in the idiopathic cases. Most frequently, when the paralysis occurs on the one side alone, it is on the side of the injury.

ON CERTAIN PUPILLARY CHANGES MET WITH IN CHRONIC PULMONARY DISEASE.

COMINI (*Annali di Ottalmologia*, 1888) gives the histories of nine cases in which he has observed mydriasis in phthisis. Most frequently it occurred on the right side, coincidently with an alternation at the apex of the lung on the same side. Sometimes it was bilateral. Photophobia and paresis of accommodation accompanied the mydriasis in some cases. The dilatation of the pupil was sometimes transitory, though it did not ever appear, as maintained by Rampoldi, who first described the form, to stand in any direct connection with the temporary aggravation of any of the symptoms. Rampoldi believed the cause to be a reflex irritation, as in the case of mydriasis proceeding from irritation of the mesenteric plexus. Comini suggests that possibly, sometimes at all events, the sympathetic may be directly involved in the disease.

THE DONDERS "FESTSCHRIFT."

In accordance with the law of Holland, professors at the universities are obliged to retire when they have attained the age of seventy years. On the occasion of the retirement of Professor Donders, which took place on the 27th of May, he was presented by a number of his former pupils with a Festschrift, in the shape of a handsome volume, containing original contributions from forty different authors. The volume embraces treatises on various

medical subjects, only fifteen of which are purely ophthalmological. Of these fifteen, the following are the most important: VAN MOLL, On the Absence of Torsional Movements on Lateral Fixation; STRAUB, On the Anatomy of the Corpus Vitreum; VAN BRAAM HOUCKGEEST, The Superior Oblique Muscle; NUEL, On the Treatment of Corneo-scleral Ruptures; HAMBURGER, The Influence of the Section of the Optic Nerve in Frogs on the Movement of the Pigment in the Cones and Retina; MULDER, Vertical Lines as seen with the Head bent to either Side; SNELLEN, Myotics and Sclerotomy in Glaucoma. Most of these are, as will be seen, of a theoretical nature and do not call for further consideration here.

Nuel draws attention to the fact that rupture of the external coats of the eye, caused by severe contusions, takes place, in the immense majority of cases, concentrically with the corneo-scleral border. He points out very correctly that the site of such ruptures corresponds to the angle of the anterior chamber, so that they do not involve the ciliary body, as is so often assumed to be the case. To this circumstance is to be ascribed the comparatively favorable course which accidents of this nature are likely to take, as far as the supervision of any severe inflammation, leading to destruction of the eye, is concerned. There is, however, often a tendency for the wound in the sclera to remain open; so that the anterior chamber is either only imperfectly or not at all re-formed, while the aqueous accumulates below the conjunctiva and raises it in the form of a bleb in front of the wound. Nuel recommends for such cases a treatment which he has found very successful. It consists in performing with a narrow knife a sclerotomy through the wound and drawing the surrounding conjunctiva over it by means of a suture placed in an original manner. The object of the operation is to cover the wound with as thick a mass of superficial tissue as possible. To effect this, the knife, after cutting through the tissues filling up the space between the lips of the wound in the sclera, is directed backward, so as to cut out a deep flap of conjunctiva. A suture is then placed in the following manner: it is entered at the equator of the eye as far back as possible and passed out and in (basted) through the conjunctiva for a considerable distance, parallel with the corneo-scleral margin. The needle is then carried diagonally over to the conjunctiva immediately surrounding the cornea at the opposite end of the wound and the thread basted in a similar manner close to the cornea and finally brought out beyond the wound at the other side. The two ends of the thread are then tied tightly together. In this way a large mass of conjunctiva is puckered up over the wound in a much more efficient manner than could be done by the introduction of a number of sutures in the ordinary way.

Snellen refers to v. Graefe's caution against substituting sclerotomy for iridectomy and ascribing the effect of iridectomy to the wound in the corneo-scleral margin. He points out, however, that at that time the value of myotics and the combination of myotics with sclerotomy as a means of reducing abnormally increased tension was not known. Snellen recommends the latter treatment as a suitable one to begin with in most cases, as, if not successful, it can be followed by iridectomy. In two cases in which he simultaneously performed iridectomy on one eye and sclerotomy on the other, followed by pilocarpine, the sclerotomized eye retained the best vision. In both cases, though, it was the last to be attacked by the glaucoma. He has observed

complete and permanent cure of glaucoma result from sclerotomy. In one case twenty years have elapsed since the operation. Snellen considers myotics of prognostic value. When under their action the pupil contracts and the tension is diminished, a good effect may be expected from an operation. He describes a case of glaucoma in an eye with irideremia and refers to the two similar cases published by v. Graefe. In this case the tension was reduced by the use of pilocarpine, which he believes can only be ascribed to its action on the ciliary muscle. He makes the following suggestions as to the manner in which sclerotomy and myotics favorably influence the glaucomatous process: "The circular fibres act in the same direction as the contraction of the pupil, viz., toward the axis of the eye. The base of the ciliary body must thereby be drawn inward. Contraction of the meridional fibres is supposed to draw the anterior attachment backward and the posterior one forward. As by increased tension the uvea is pressed against the sclera and its displacement rendered less easy, the contraction would be more appreciable in the anterior part and, by dragging on the anterior wall of Schlemm's canal, would release the tension on the tissues further back. A portion of the radial fibres end in the membrane of Descemet. Might it not be supposed that from a sclerotomy, aided by a strong myosis, the posterior lamellæ of the cornea may be so extended that a gaping wound results in Descemet's membrane, which, otherwise, owing to its endothelial covering, is impervious." This supposition of a patency of the inner portion of the scleral section remaining permanently is considered by Snellen to be supported by the flattening of the cornea and consequent astigmatism which are so commonly observed after sclerotomy.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

THE INFLUENCE OF DIATHESIS IN DISEASES OF THE LARYNX.

DR. SENAC-LAGRANGE, in an elaborate article (*Annales des mal. de l'oreille, du larynx, etc.*, Mai et Juni, 1888), contends that there is a prominent etiological element in all laryngeal inflammatory diseases due to dynamic conditions, and indicated by paretic or by contractural conditions as presented in the subjects of the lymphatic or of the arthritic diathesis, or of the hybrid resultant in which lymphatism is usually predominant.

He supports this new theory in etiology by numerous examples taken from the records of cases of dysphonia, paralysis, spasm, catarrhal and glandular laryngitis, syphilis and tuberculosis; and by tracing the connection between the diathesis, which has usually escaped the cognizance of the recorders, though distinctly indicated in their clinical histories, and the accurate descriptions of the anatomical changes detailed.

This differentiation of species, it is claimed, can be successfully utilized in the constitutional treatment of laryngeal maladies, and, likewise, in topical treatment; support being given in the atonic lymphatic class of cases, and modification by substitutive action in the arthritic class, thermo-alkaline waters being indicated in the latter group and saline alkaline in the former, whatever the character of the lesion.

ON THE TRANSFORMATION OF BENIGN LARYNGEAL GROWTHS INTO CARCINOMATA.

The editor of the *Internationales Centralblatt für Laryngologie, etc.*, DR. FELIX SEMON, of London, states, in the issue for July, that while he has not yet had time properly to prepare, in detail, the material he has collected, he can announce the fact that apparent transformations have been reported in 32 instances only out of 8216 intralaryngeal operations upon morbid growths, a proportion of less than one-half of one per centum. Further analysis of these 32 cases shows that 16 of them are quite questionable, 12 of these being recorded as doubtful by the reporters. Hence the proportion is reduced to less than one in five hundred, or a proportion of 1 : 513.

CANCER OF THE LARYNX.

In a critical review (*Le Progrès Médical*, May 19, June 9, 23, and July 17, 1888) DR. J. BARATOUX presents first an historical bibliographical summary of the literature from Morgagni to Schwartz (1886). According to this review, statistical records show that carcinoma has occurred in the proportion of about one case in every three hundred of laryngeal disease as seen by laryngologists. Intrinsic carcinoma is almost always located above the glottis, and is much more frequent than extrinsic carcinoma. Carcinoma is much the more frequently unilateral, the left side being affected far oftener than the right.

Baratoux includes sarcoma, epithelioma and carcinoma in his category of cancer. Sarcoma is the least frequent, and the fasciculated variety is much more frequent than the globocellular. Sometimes it is of the mixed variety. Lymphosarcoma, alveolar sarcoma and myxosarcoma have been noted likewise. Epithelioma is the most frequent variety of cancer, comprising nearly four-fifths of the whole. Nearly all examples have been lobulated. Carcinoma proper occurs in the proportion of about three to twenty. The cause of cancer is uncertain. Topical irritation precedes in some instances. Heredity is evident in others. It has been observed occasionally in association with tuberculosis.

Cancer has been observed in the very first year of life, and as late as the ninth decennium; but more than half of the cases were between the ages of forty and sixty years. It is far the more frequent in the male, occurring in the proportion of about seven to one in the other sex.

Involvement of the lymphatic glands occurs in intrinsic cancer as well as extrinsic, but in far less proportion. It is usually unilateral, involving one or more glands along the border of the sternomastoid muscle. In intrinsic cancer the first gland to be affected is one at the anterior border of the muscle at a level with the thyro-hyoid ligament; in extrinsic cancer it is the inferior

cervical ganglions which become implicated. This involvement is rarely early. It may become sufficiently voluminous to compress the trachea injuriously, it may contract adhesions with adjoining tissue, and it may undergo inflammation and ulceration. On the other hand, it must be remembered that all enlarged glands are not cancerous.

The indications are given for the differential diagnosis of the varieties of cancer from each other, and from tuberculosis and syphilis. The methods of treatment are discussed in detail and the most complete tables of the various operations and their results yet published are given.

Baratoux concludes that extirpation of the larynx is the best method of obtaining a favorable result, especially if the diagnosis has been made early, because it not only prolongs life but renders it supportable.

In discussing palliative treatment Baratoux recommends most highly tincture of arbor vita, both topically and internally, in doses of 15 to 30 grains. He cites the case of a female whose life had, at the time of writing, been prolonged forty months by this remedy, although the cancer involved the palate, posterior palatine folds, uvula, tonsils, lateral walls of the pharynx, the epiglottis and the vocal bands. The same remedy has long been vaunted for cutaneous warts and in cancer of the uterus.

In reporting (*Rev. Mens. de Lar.*, etc., June, 1888) a case of cancer of the larynx in which tracheotomy was performed because his patient declined to submit to a proposed laryngectomy, DR. J. CHARAZAC, of Toulouse, compares the results from this palliative operation with those of the radical one and concludes that the latter is the proper procedure in all cases strictly limited to the interior of the larynx, before there has been any contamination of the glands and while the general health remains unimpaired. Confined to cases of this kind he anticipates increasing successes from the operation.

CHRONIC ABSCESS OF THE STUMP OF AN ABLATED TONSIL.

DR. NOQUET relates (*Rev. mens. de Lar.*, July, 1888) an unusual instance of abscess of the stump of a tonsil communicating with the exterior by a small fistule, from which pus had exuded daily for six months, in a married female, twenty years of age. She had in infancy been the subject of tonsillar hypertrophy. The right gland had been excised at about six years of age; the left about six months previously to examination. The stump, at the border of the palatine folds, was very red and notably hypertrophied, and, on pressure, pus exuded from a fistule. An incision with the electric cautery released about a teaspoonful of pus. After several cauterizations a cure was effected.

THE PARASITIC NATURE OF ACUTE CORYZA.

DR. F. CARDONE, of Naples, contends (*Archiv Italiani di Laringologia*, Luglio, 1888) that the morbid process in acute coryza is analogous to that of pneumonia. The acute initial stage, the type of fever, the course, the critical defervescence, the character of the secretions, the prostration of the patient, the ready transference of the affection to the inferior tract of the respiratory

passages which characterize coryza have great analogy with the course of pneumonia; a consideration emphasizable from the fact that the nasal mucous membrane is the first portion of the respiratory tract. This opinion was expressed in 1886 by Massei, Trifiletti and Meyer.

In examining the secretions Cardone has found the *streptococcus pyogenes*, the *staphylococcus aureus et albus* and, in greater quantities, the *diplococcus* of Fränkel and the *pneumococcus* of Friedländer.

CEPHALALGIA FROM INTRANASAL DISEASE.

Under the caption *Des Céphalées de Croissance*, previously adopted by Dr. René Blache, Dr. JOAL discusses (*Rev. mens. de Lar., etc.*, July, 1888) a certain class of headaches which occur about the period of puberty. Blache attributed them (1883) to disproportion between cerebral activity and efforts of intelligence; Keller, some months later, to a dolorous neurosis of the brain. Perin and other ophthalmologists attribute them to asthenopia. Hack (1883) claimed that they were due to intranasal disturbances, and he has been supported by Ruault and others. Joal reports in detail two confirmative instances in a male subject, fifteen years of age, and in a female, aged fourteen years. There was a genital complication in each of these instances, the symptoms becoming aggravated, in the one case, during two attacks of preputial herpes and, in the other, at the menstrual period. Hence, Joal is led to sustain the opinion of Mackenzie, of Baltimore, that excitation of the sexual apparatus should be considered a factor in the production of diseases of the nares.

DR. MÉNIÈRE (*Ibid.*) relates an instance of daily cephalalgia of two years' duration cured by intranasal cauterizations and ablation of adenoid masses.

SYMPTOMS OF DISEASES OF THE SPHENOIDAL SINUS.

DR. EMILE BERGER (*Rev. mens. de Lar.*, July, 1888), in order to learn the symptoms by which diseases can be detected during life, has carefully studied the records of all reported cases in which disease of the sphenoidal sinus has been found *post-mortem*. Caries and necrosis present the following group of symptoms: 1, sudden unilateral blindness, with phlegmon of the orbit; the origin of the blindness being perineuritis of the optic nerve in the optic canal; 2, slow detachment of fragments of bone, without ocular troubles; and, finally, meningitis; 3, sudden discharge of a large quantity of bone by the nose; 4, fatal hemorrhage after perforation of the wall between the sphenoidal and the cavernous sinuses; 5, retropharyngeal abscess; 6, thrombosis of the sinus and of the ophthalmic vein, due to thrombosis of the circular venous sinus of the *sella turcica*; 7, perforation of the inferior wall of the sphenoidal sinus, without any other symptom. In cases of tumors of the sphenoidal sinus, four periods can be distinguished: 1, when the tumor is limited within by the walls of the sinus, there may be no symptoms, or cephalalgia only; 2, when the tumor, by its growth, dilates the walls of the sphenoidal sinus, producing their atrophy and compressing adjoining organs; the compression may involve one or both optic nerves and produce amaurosis; 3, when the tumor may propagate beyond the walls of the sphenoidal sinus; it may extend into the nasopharyngeal cavity, into the ethmoid cells, into the orbit

and, finally, into the cranial cavity; perforation of the base of the cranium may occur without any symptoms or may excite very grave cephalalgia; 4, metastases are observed in various organs. Epileptic seizures often take place. If the tumor grows rapidly, then meningitis or cerebral abscess occurs soon after perforation of the base of the skull.

Wounds of the sphenoidal bone may produce the following symptoms: 1, in fissures of the superior wall of the sinus, continuous trickling of cerebro-spinal fluid; 2, rupture of a fragment of the body of the bone may wound the internal carotid to the inside of the cavernous sinus and cause pulsating exophthalmia; 3, continuation of the fissure in the canal of the optic nerve will cause compression or rupture of the optic nerve and, consequently, amaurosis; 4, if the fissure extends to the oval or round foramen, it will produce anæsthesia of the second and third branches of the trifacial, and a rupture or wound of other and cerebral nerves may present simultaneously.

OBSTETRICS.

UNDER THE CHARGE OF

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A CASE OF SEXTUPLE PREGNANCY.

VASSALLI, a physician of Castagnola near Lugano, Switzerland, reports a case of premature labor with sextuple births at four months pregnancy. The sexes were unlike, the fœtuses fully formed; there was one placenta. The father belonged to a prolific family, and by a previous marriage had ten children. Statistics show that the district of Castagnola is peculiar for multiple births. The specimen has been placed in the Royal School of Obstetrics at Milan.—*British Medical Journal*, June 9, 1888.

THE RESULTS OF PRECIPITATE BIRTHS.

GOLTZ (*Correspondenz-Blatt für Schweizer Aerzte*, No. 9, 1888) has collected thirty-seven cases of precipitate births, from the study of which he draws the following conclusions: These cases do as well as the average normal labor; their complications are moderate hemorrhage and fever, and delayed involution of the uterus; these complications occurred frequently, but resulted favorably. None of the patients had the assistance of skilled or unskilled persons; no sepsis was observed among them.

The children suffered from conjunctivitis, catarrh, and showed a slight scalp tumor, which rapidly disappeared. The maternal mortality was almost nothing; that of the children was 26.8 per cent.

EMBRYOTOMY.

BUDIN (*Le Progrès Médical*, Nos. 18 and 19, 1888) in his clinic described a case of neglected shoulder presentation which came to his attention when the

fœtus was dead and impacted in the pelvis. The uterus was contracted firmly upon the fœtus.

Version being considered impossible, embryotomy was done with Tarnier's embryotome. This instrument consists essentially of a hook carrying a sheathed linked saw, which is gradually tightened after being placed in position. The fœtus was divided at the upper extremity of the thorax. The trunk was delivered by traction; the head was expelled spontaneously. An intrauterine douche of two quarts of bichloride of mercury, 1 to 2000, was given; the patient made an uninterrupted recovery.

Budin prefers Tarnier's embryotome as less dangerous to the maternal tissues than any form of scissors.

EXTRAUTERINE PREGNANCY, TREATED BY LAPAROTOMY.

HERMAN (*Lancet*, May 26 and June 2, 1888) reports two cases of early extrauterine pregnancy, cured by laparotomy, the dilated tube and ovum being removed, hemorrhage checked and the abdomen cleansed. In a third case operation was delayed, but when performed revealed a ruptured Fallopian tube, with clotted blood: the patient succumbed. In this case, before operation, the hæmatoma had been opened, a drainage tube inserted and the cavity washed out, but hemorrhage persisted until the tube was removed.

Herman believes that many cases recover spontaneously, by absorption of the larger portion of the ovum. Puncture and electricity are not to be relied upon. Early abdominal section gives best results when treatment is indicated.

AN INTERESTING CASE OF ECLAMPSIA.

CHARPENTIER (*Bulletins de la Société Obstétricale*, No. 6, 1888) reports the case of a primipara, six and a half months pregnant, in whom albuminuria was detected on several occasions by different physicians, and appropriate treatment ordered: this was persistently neglected.

Eclampsia supervened suddenly, at night, without warning; a condition of partial coma followed which persisted until treatment had been employed for forty-eight hours; the urine was extremely rich in albumin. Coma was followed by convulsions, in the first of which the fœtus perished. Temperature and pulse remained normal. Epigastric pain and headache were the symptoms; disturbances of vision did not develop until forty-eight hours after albuminuria and convulsions had ceased.

Labor was not attended by convulsions; dilatation of the cervix was slow, but there was no post-partum hemorrhage; the puerperal period was normal.

PUERPERAL SEPTICÆMIA WITH GANGRENE; RECOVERY.

CHARPENTIER (*Bulletins de la Société Obstétricale*, No. 6, 1888) reports the case of a primipara in whom septicæmia followed the normal delivery of an adherent placenta. Diphtheritic ulceration, with gangrene of the superficial tissues, developed.

The uterus was curetted with a dull curette, and swabbed with creasote and glycerin (1 to 2); an intrauterine douche of bichloride of mercury, 1 to 2000, was given, and iodoform gauze was applied to the vagina; quinine and alcohol

were freely administered. Great improvement followed; five days afterward septic pleurisy developed on the left side. The patient made, however, a good recovery without further operative treatment.

A CASE OF PURULENT PUERPERAL PERITONITIS; DRAINAGE; RECOVERY.

WOODWARD (*Boston Medical and Surgical Journal*, July 12, 1888) reports a case of purulent puerperal peritonitis to which he was called about six weeks after labor. An extensive accumulation of pus in the abdomen, and septicæmia were diagnosticated. The abdomen was opened, offensive pus evacuated and the cavity irrigated with hydronaphthol (1 to 1100); a drainage tube and antiseptic dressing were applied. After repeated irrigation with boiled water and constitutional treatment the patient recovered.

The abscess had at first been circumscribed, but thirty-six hours before the operation had burst into the abdominal cavity. Recovery, under these circumstances, was remarkable.

AIR-EMBOLISM IN PLACENTA PRÆVIA.

KRAMER (*Zeitschrift für Geburtshülfe*, Band 14, Heft 2) reports a case of placenta prævia (centralis) in which turning was just accomplished when, following a uterine contraction and contraction of the abdominal muscles, the patient collapsed and died.

Post-mortem examination revealed the right heart distended with air: in the deeper layers of the decidua the open mouths of veins were seen, through which air had entered. No air was present in the uterine veins; that which entered when the uterine and abdominal contraction relaxed and the blood-pressure in the abdominal veins became negative had passed at once to the heart.

THE AMNIOTIC FLUID A MEANS OF FŒTAL NUTRITION.

AHLFELD (*Zeitschrift für Geburtshülfe*, Band 14, Heft 2) concludes, from the examination of the meconium, that the fœtus swallows considerable quantities of the amniotic fluid. This is a physiological process; he has found the amniotic fluid albuminous in several cases, ranging from twenty to fifty per cent. albumin. His tests were nitric acid and heat.

He concludes that the albumin of the amniotic fluid is nutriment for the fœtus, and by an elastic bag applied over the mother's abdomen at the location of the child's back, he demonstrated movements of the child's thorax in the uterus, which he considered motions of deglutition.

THE MICROÖRGANISMS IN THE GENITAL CANAL OF THE HEALTHY FEMALE.

WINTER (*Zeitschrift für Geburtshülfe*, Band 14, Heft 2) reports experiments undertaken at the suggestion of Schröder, to determine what microörganisms are present in the various portions of the female genital canal.

He concludes that the normal Fallopian tube contains no microörganisms. The normal uterine cavity contains no germs; in half the uteri examined they were present at the internal os. In the secretion of the cervix were

found abundant microorganisms, which increase during pregnancy; bacilli also develop. The vagina always contained abundant germs. The boundary for germs is the internal os uteri. These microorganisms were found to be pathogenic, but not possessing the virulence commonly characterizing them.

Winter urges the practical conclusions regarding the disinfection of the vagina and cervix before operations which follow from these facts. He regards the germs always present in the external portion of the genital canal as capable of becoming virulent when infected from without; in that case infection of the portion of the tract otherwise free would occur, and auto-infection result.

THE PREVENTION OF OPHTHALMIA NEONATORUM.

AHLFELD, in the clinic at Marburg, has not had a case of pronounced *ophthalmia neonatorum* for three and one-half years, and no suppurating conjunctivitis for one and one-quarter years. This immunity he ascribes to the use of an antiseptic douche before labor; cleansing the child's eyelids as soon as the head is born; keeping the child's face as much as possible from the fluids in the vagina; and precautions in bathing the child. The face and head are never bathed in the water which cleanses the body; the eyes are bathed with clean water, by means of cotton.

Ahlfeld has no explanation for the fact that children seldom acquire the disease after the first week of life.—*Zeitschrift für Geburtshülfe*, Band 14, Heft 2.

THE INFLUENCE OF DRUGS TAKEN BY NURSES UPON NURSLINGS.

FEHLING (*Medical Press*, May 9, 1888) has made investigations upon this subject, as follows:

Soluble substances pass from the blood into the milk. Sodium salicylate became dangerous to an infant after its nurse had taken forty-five grains; iodide of potassium may be given in daily doses of three grains without injury; it was found in the milk twenty-four hours after the nurse ceased to take it. Potassium ferrocyanide does not pass readily into the milk.

Iodoform, even when applied externally to the mother, passes very readily into the blood, and affects the child more powerfully than when it is applied to lesions upon the child. Mercurials given to the mother do not affect the child readily.

Regarding narcotics, twenty-five drops of tincture of opium (German Phar.) did not affect the child; he concludes that from one-tenth to three-tenths of a grain of morphia may be given at a dose with safety to the child; from twenty to forty grains of chloral may be likewise given. If the breast was withheld for one and a half or two hours after these doses no effects on the child were observed. Atropia affects the child very readily and powerfully.

Fehling experimented with citric acid, mineral acids and vinegar, finding that their use does not affect the child; the normal alkalinity of the milk remains undisturbed. No restriction in this direction should be put on mothers' diet.

As to the influence of fever upon the milk, the septic fevers counter-indicate nursing, because the milk ducts and secretion are infected with micro-

cocci. The child should be at once taken from the breast in these cases. In non-septic fevers the child should nurse so long as the secretion remains, and simple means should be used to abate the mother's fever.

GYNECOLOGY.

UNDER THE CHARGE OF

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THE TREATMENT OF RETROFLEXION.

An interesting discussion on this subject occurred at the recent meeting of the German Gynecology Society, at Halle (*Centralblatt für Gynäkologie*, June 16, 1888). It followed a paper by SKUTSCH, who advocated the more intelligent use of pessaries, even in cases in which the uterus could not be entirely replaced in consequence of firm adhesions; the latter might be stretched by gradual pressure and systematic massage. Cord-like adhesions were best stretched by bimanual palpation, while in the case of broad bands or extensive parametric exudates, Brandt's method of bimanual massage was valuable. If the movements of the uterus were limited, but the organ was not fixed, it should be replaced and a pessary introduced. In order to carry out this treatment successfully, it was necessary to recognize by careful vaginal and rectal examinations the exact anatomical condition. Of 205 cases of retroflexion treated in Schultze's clinic, 182 were decidedly benefited by pessaries; in 15 cases of fixation, the adhesions were stretched by pressure and massage, so that the uterus could be replaced, while in 19 they were separated according to Schultze's method.

In cases of abnormal shortening of the anterior vaginal wall, the tension might be relieved by making transverse incisions, and uniting them in a line parallel with the axis of the vagina. Skutsch thought that in obstinate cases of retroflexion laparotomy offered the only certain prospect of cure, but it was to be regarded as a last resort. Sänger said that he preferred ventro-fixation to Alexander's operation. Fritsch thought that pessaries were invaluable if rightly used; it was easier to perform a laparotomy than to treat a case of retroflexion successfully. Winckel agreed with the last speaker; while in America he had observed the bad effects of Alexander's operation. Schultze confirmed the experience of Fritsch, and added that he had never seen complications disappear by replacing the displaced uterus.

CAUTERIZATION VERSUS CURETTING IN THE TREATMENT OF ENDOMETRITIS.

A recent discussion on this question before the Paris Obstetrical and Gynecological Society (*Bull. et Mémoires*, June, 1888) was of interest by reason of the expression of their views by several prominent French gynecologists.

PAJOT stated that he has practised cauterization of the uterine cavity for endometritis for nearly forty years, and had never had a fatal result follow the treatment; he had noted only four cases of perimetritis which could be referred to the application. This freedom from accidents he attributed to the strict observance of antiseptic precautions.

CHARPENTIER preferred curetting to the use of the *porte-caustique*, because of the greater rapidity of the cure, and the absence of pain and inflammatory complications.

DOLÉRIS warmly defended the curette by the use of which all the diseased tissue was removed and could be examined microscopically, while there was no danger from cicatricial contraction of the canal which sometimes resulted from caustics. There was certainly more risk of setting up periuterine inflammation when cauterization was practised. If caustics were applied, it should be done after the diseased tissue had been removed.

[It will appear almost amusing to the American reader that M. Doléris, whom we recognize as the most progressive French gynecologist, should find it necessary to champion the cause of the curette as opposed to a method of treatment which we long ago rejected as barbarous and unscientific.—ED.].

THE EXTRA-PERITONEAL METHOD OF TREATING THE STUMP AFTER SUPRAVAGINAL AMPUTATION.

PROF. CARL BRAUN (*Wiener med. Wochenschrift*, 1887, Nos. 22-25) reports thirty-eight cases of hysteromyotomy in which the stump was treated thus, the mortality being only 15.5 per cent. The pedicle was dropped back in two other cases, which terminated fatally. The writer prefers the former method, which has won favor among Vienna gynecologists by reason of the good results which have attended its application to Porro's operation.

SECOND LAPAROTOMY IN THE SAME PATIENT.

MARTIN (*Centralblatt für Gynäkologie*, June 23, 1888) has performed laparotomy upon twenty-two patients for the second time, exclusive of cases of secondary laparotomy within ten days after the primary section. In ten cases the operation was for disease of the remaining ovary, in seven, for salpingitis resulting from acute gonorrhœal infection, or from a recurrence of the trouble for which the other tube was removed. In four instances uterine fibro-myomata had developed *after* the first operation. It was noted at the time of the second laparotomy that even when the patient had recovered from the former one without any evidences of peritonitis, it was the rule to find the intestines adherent to the abdominal wall and to one another. For this reason, Martin always made his second incision at the side of the old cicatrix. In order to avoid the necessity of a subsequent operation, it was desirable to remove, if possible, all diseased tissues the first time. Although he met with great difficulties in secondary laparotomies, the writer lost only one patient from sepsis and two from collapse. If the old cicatrix was much stretched he thought it best to excise it entirely, in order to avoid subsequent hernia.

PRELIMINARY OPERATION BEFORE OPENING CYSTIC TUMORS.

KEIL (*Id.*, June 30, 1888) advocates this measure, which was first employed by Volkmann. Its object is to avoid the danger consequent upon the rupture of a firmly adherent purulent sac during the attempts to extirpate it. An incision is made in the inguinal region, the cyst is exposed and its wall is stitched to the edge of the wound; the latter is left open and is packed with iodoform gauze. At the end of a week the dressing is removed, and the cyst is found to be adherent to the abdominal wall; it is then incised and drained, and is allowed to close by granulation.

A MODIFICATION OF ALEXANDER'S OPERATION.

CASATI (*Raccoglitore med.*, 1887, Nos. 5-8) in shortening the round ligaments makes a single transverse incision through the skin, somewhat curved, with its concavity upward; this unites the two external rings. Both round ligaments are then drawn out and the redundant portions are excised. The proximal end of each cord is next stitched to the distal end of the opposite one, so that they form a cross; the latter is united to the subjacent cellular tissue by a continuous suture of catgut, after which the wound in the integument is closed with silk. The uterus is supported by means of vaginal tampons.

VAGINAL CYSTS.

TAKAHASI (*Deutsche medicinische Wochenschrift*, June 7, 1888) has investigated the vexed question of the origin of vaginal cysts, and describes the microscopical appearances observed in six specimens. Unlike Hening and other observers, he was unable to find any true glands in the sections examined, although in two cases he noted the presence of follicles, which he regarded as of inflammatory origin. He inferred that the epithelium lining the cysts was derived from that of the vaginal mucosa. The deep situation of the cysts within the muscular layer, and even between the fibres, showed that they could hardly arise, as some writers claimed, from crypts or folds in the mucous membrane. On the other hand, Takahasi found circumscribed collections of cells in the vaginal mucosa, in the centre of which were evidences of commencing cyst formation. The fact that cysts were situated with nearly equal frequency on the anterior and posterior walls of the vagina was, in his opinion, an argument against the theory of their frequent development from the ducts of the Wolffian bodies. In short, vaginal cysts in the same patient may have an entirely different origin, so that it is impossible to refer them all to a common source.

COLPITIS EMPHYSEMATOSA.

Under this term ZWEIFEL (*Archiv für Gynäkologic*, Bd. xxxii. Heft 1) describes a condition to which Winckel gave the name "cystic hyperplasia" of the vagina. Contrary to the opinions of Klebs, Ruge and others, Zweifel claims that air-cysts originate in the glands, even though many of the cysts have no epithelial lining; the disappearance of the latter may be due to long-continued pressure. The fact that the gas has been found diffused throughout the interstitial spaces may have led the authors mentioned to overlook their

glandular origin. In the cases observed by the writer the fact that the vaginal secretion contained many air-bubbles, as well as its offensive odor, led to the inference that the gas in the cysts, as well as in the vagina, was the result of decomposition, while the presence of trimethylamine in both the cysts and the vaginal secretion caused him to believe that the former ruptured in consequence of the expansion of this gas when heated. From repeated observations he found that trimethylamine was sometimes present in the genital secretions of healthy pregnant women.

DILATATION OF THE URETHRA TO RELIEVE RETENTION OF URINE
FOLLOWING DELIVERY.

SCHATZ has called attention to a simple method of relieving retention, which he considers preferable to the ordinary practice of repeatedly using a catheter until the patient developed cystitis. He employed an instrument like a glove-stretcher, which was introduced into the bladder and opened, the sphincter vesicæ being dilated so that the tip of the little finger could be passed through it. The pain was slight and ceased immediately after the operation. There might be slight hemorrhage. A second dilatation was seldom necessary, as the urine was passed the next time spontaneously. Schatz believed that the practice would become general, since it was so much less harmful than the frequent use of catheters.

He was unable to give a satisfactory explanation of the *modus operandi* of the operation, but he was led to test it by comparing the physiology of vesical with that of uterine contraction. In normal urination, the detrusor was not to be regarded as the antagonist of the sphincter vesicæ, but the former could, however, relax the sphincter. In most women the bladder was actually in diastole during micturition, so that it was necessary to infer the presence of some other mechanism for relaxing the sphincter, either a passive relaxation of the latter muscle, or active contraction of its antagonists which were inserted somewhere on the pubic bones. If these muscles were torn during parturition, they might be powerless to relax the sphincter. Passive relaxation of the sphincter itself would naturally take place more rapidly if, after being swollen or irritated, it was rendered more pliant by stretching. Dilatation was also applicable to retention in the non-puerperal woman, but it was more uncertain in its results; it was especially applicable to retention after operations.—*Centralblatt für Gyn.*, June 16, 1888.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

MATTHEW HAY, M.D.,

PROFESSOR OF MEDICAL JURISPRUDENCE, UNIVERSITY OF ABERDEEN.

ON MEDICAL RESPONSIBILITY.

L. REUSS (*Annal. d'hyg. publ.*, sér. 3, t. xix. pp. 528-550) discusses, under the above title, the case of Dr. Flocken, of Strassburg, who, along with a

druggist and his two assistants, was charged with the contravention of certain articles of the German penal code, which render it criminal for any one who, in the practice of his profession or trade, causes the death of a person by neglecting to give such particular attention to his studies as, by his profession, he ought to do.

It appears that Dr. Flocken, who occupies a highly respectable position, was, toward the close of last year, called to attend an innkeeper, Mathias, suffering from arthritic pains, and prescribed a liniment and a mixture. Two spoonfuls of this mixture were taken by the patient within two hours, and shortly afterward he suffered from vomiting and diarrhœa. Nevertheless, a third spoonful was taken, and the vomiting and diarrhœa increased, accompanied by irritation of the throat, constriction of the belly and insatiable thirst. The doctor was again summoned and came. He asked for the bottle which contained the mixture, washed it out with warm water and carefully scraped off the label. He then placed some iodide of potassium in it, added water and ordered the patient to take the new mixture at certain intervals. After three or four doses the vomiting ceased, but the diarrhœa continued. The doctor revisited the patient and tried other remedies to arrest the diarrhœa, but without success. The patient now became very feeble, complained of a suffocative feeling and abdominal pain, with cold extremities, and died thirty-six hours from the time he took the first dose of medicine prescribed by the doctor. The doctor then asked for his first prescription and took it away with him, and afterward certified the cause of death to have been endocarditis following upon an attack of articular rheumatism.

On the following day, an anonymous letter was received by the police authorities, directing their attention to the suspicious character of the innkeeper's death. Dr. Flocken was at once interrogated by the authorities and stated that his first prescription consisted of a little digitalis mixed with either salicylic acid or tincture of colchicum, or possibly with salicylate of lithium. On the following day he confessed to having made a mistake and then remembered that he prescribed digitalis and tincture of rhubarb. As the prescription had been dispensed by a druggist, Greiner, his register of prescriptions was searched, and one by Dr. Flocken was found, corresponding to that under discussion. It contained infusion of digitalis, salicylate of lithium, extract of rhubarb and syrup, all in ordinary doses; but the register examined was a new one and seemed to have been begun only two days before Dr. Flocken's prescription was entered. Further investigation showed that the register was bought three days after the day of entry of the doctor's prescription. The exhumation of the innkeeper's body was then determined on and was carried out about three weeks after the death. The autopsy revealed no particular cause of death. The mucous membrane of the stomach and intestines was much congested and was covered with several small ecchymoses. All the other viscera were healthy. No poison was found.

Meanwhile, information reached the police authorities of the death of another person, a barman, Herter, under similar circumstances, and also the patient of Dr. Flocken. Herter became ill, suffering also from arthritic pains, on the same day as Mathias, and was on that day prescribed for by the doctor, who ordered a liniment and mixture as before. The prescriptions were also dispensed by Greiner. The same results followed the admin-

istration of the mixture—vomiting and diarrhœa. The doctor, at his next visit, asked for the bottle, washed it out, scraped off the label, as in the other case, and refilled it with a solution of morphine. The new medicine stopped the vomiting, but the diarrhœa continued, and the patient died on the fourth day after he had begun to take the prescribed medicine. Professor Wieger was called in as a consultant before the patient's death and was told by Dr. Flocken that the patient had been ordered some colchicum; but the professor attached no importance to this and attributed the illness and death to a fatty heart and nephritis, preceded by diphtheria, diarrhœa and a gouty attack. Dr. Flocken certified the cause of death to be paralysis of the heart, following upon enteritis, with nephritis and pericarditis. Herter's body was also exhumed after about three weeks. The kidneys were much congested, the heart and liver somewhat fatty and the large intestine showed traces of diarrhœa, without much alteration of the mucous membrane. In this case the registered copy of the prescription for the mixture showed that it contained tincture of colchicum, salicylate of sodium and extract of juniper, all in ordinary doses.

Finally, Dr. Flocken, Greiner and his two assistants were arrested; when the druggist confessed that he had, at Flocken's request, altered the register of the prescriptions and for that purpose had purchased the new register already alluded to. The original prescriptions had each contained *extract* of colchicum, but in such dose as would be suitable to the *tincture* of colchicum. Dr. Flocken now admitted this; but to clear the conscience of the tribunal a large number of skilled witnesses were brought forward at the trial, including men of such eminence as Flückiger, Schmiedeberg, von Mering, Husemann and Wieger. It was contended, on behalf of Dr. Flocken, that the dose of the extract prescribed was not poisonous; and that, even if it were, the patients had had the poisonous action neutralized by subsequent treatment and that they had died from natural causes. Schmiedeberg and von Mering testified that the dose of the extract prescribed—viz., about 0.2 gramme (3 grains) in each spoonful—was equivalent to about 15 or 20 grammes (225 to 300 grains) of the tincture, three spoonfuls, or the quantity taken by each patient, being equal to 45 to 60 grammes (675 to 900 grains), and that such a quantity was undoubtedly poisonous, the maximum medicinal dose being, in their opinion, 6 grammes (90 grains) daily. Husemann, on the contrary, maintained that the extract is not so much more poisonous than the tincture; that a maximum medicinal dose is, at best, a mere hypothesis; and that although the two deaths might have been due to colchicum, yet they were more probably caused by disease. Wieger asserted that Herter had died of a heart affection. The tribunal found Flocken, Greiner and one of the assistants guilty and sentenced the first to ten months imprisonment and the others to five days and two months respectively.

Reuss, the author of the present communication, traverses the conclusions of the tribunal and, of certain of the medical witnesses, and, although admitting that the dose of colchicum prescribed may have been a poisonous one, he contends that Flocken exhibited no criminal neglect—that he had simply made the unfortunate slip of writing *extract* instead of *tincture*. He denies that the tribunal received clear evidence as to the deaths being due to colchicum and not to natural causes. It appears, however, to the writer of the abstract

that there can be little, if any, doubt as to colchicum being the cause of death in both cases.

WATER IN THE STOMACH AS A SIGN OF DEATH BY DROWNING.

OBOLONSKY, of Charkow, Russia, reports in the *Viertelj. f. gerichtl. Med.* (N. F. Bd. xlviii. S. 348-352, 1888) the results of eighteen experiments with the dead bodies of infants, two weeks to two months old, in which he placed the bodies in a large vessel of colored water, sinking them by means of attached weights, and observed by dissection afterward whether water had penetrated into the stomach. The bodies remained in the water for twenty-four hours to three days. No water was found to have entered the stomach during twenty-four hours' submersion; but in five of the bodies submerged for three days, water had entered the stomach. In three of these, a notably large quantity of water was found; in the remaining two, a small quantity.

These experiments confirm the conclusions of Liman and Hofmann and are opposed to the earlier, and in some countries still current, teaching of medical jurists. They show that water in the stomach (swallowed from the water in which the person was drowned) does not afford indubitable proof of death by drowning since the water may enter the stomach after death.

CASE OF BESTIALITY.

A singular case of this kind has been reported to the Société de Médecine légale de France by a physician of Orleans (*Annal. d'hyg. publ.*, 3e série, t. xix. pp. 56-58), who desires to conceal his name. The physician was called to a male domestic servant, aged eighteen or nineteen years, who was suffering from a large wound in the anus, which had bled profusely. The wound was about two inches long and was of the nature of a large rupture of one side of the anus. After much hesitation the boy confessed that for some time before he had frequently permitted a large, strong spaniel to have connection with him. The connection had been, until the last occasion, unattended by injury. On this occasion, however, the boy having been called in the middle of the act and afraid of being surprised by a visit from his master, endeavored to detach himself as speedily as possible from the dog. This was rendered difficult by the non collapse of the large swelling toward the base of the dog's penis, which was grasped within the anus. The boy, however, in spite of the cries of the dog and his own suffering, contrived finally to separate himself forcibly from the dog, but not without producing the large rupture of the anus referred to.

This case is interesting in view of the statement made by Bouley and Brouardel and others that connection of dogs with men is highly improbable.

ALCOHOLIC POISONING.

C. SEYDEL, of Königsberg (*Viertelj. f. gerichtl. Med.*, N. F., Bd. xlviii. S. 430-449, 1888), presents a study of the literature of this subject, accompanied by several operations and experiments (on rabbits) of his own, with the object of ascertaining the characteristic pathological changes in death from

alcoholic poisoning, acute and chronic. He enters into a lengthy criticism of Formad's results, which, for the most part, Seydel is not able to confirm.

The changes in the volume and form of the kidneys (pig-backed) which Formad described as diagnostic of acute alcoholic poisoning Seydel has not met with either in man or in rabbits. He attaches importance, however, to the cloudy condition of the epithelium of the tubules of the kidneys, also mentioned by Formad. It may be expected in cases of death from repeated alcoholic excesses. The same is true of albuminuria. The kidneys are usually distended with dark fluid blood after death from alcoholic poisoning, and the blood of the body generally is of a dark color.

AN EPIDEMIC OF LEAD-POISONING.

BERTRAND and OGIER (*Annal. d'hyg. publ.*, 3e série, t. xix. pp. 68-75) give the results of an investigation of an epidemic of lead-poisoning which broke out simultaneously in three separate communes in the neighborhood of Roanne, and afterward extended itself to other adjoining communes, more than one hundred persons, of different ages, being affected, and these belonging to the poorer classes chiefly. It was not attributable to the water-supply, as the water used by the various affected persons was taken from widely separate sources; nor was it due to the use of lead-glazed pottery or lead-plated utensils. Everything pointed to some article of daily diet being the carrier of the lead; and the author suspected the flour. Subsequent inquiry showed that the flour in every case had been ground in a particular mill. Chemical examination of various samples of flour from this mill revealed the constant presence of lead in small quantity.

It was at first supposed that the lead had been obtained, as in some previously reported cases, from the lead sometimes used to fill fissures in the mill-stones, but the stones of this particular mill were found to have been repaired with a cement which contained no lead. The source of the lead was afterward discovered to be lead-plated cups, fixed to a revolving endless belt, which were employed to raise the flour to an upper part of the mill. When these were replaced by tinned-iron cups, the lead entirely disappeared as also did the lead-poisoning.

CHRONIC ILLNESS FROM INHALATION OF HYDROCYANIC ACID.

ALOYS MARTIN (*Ein Fall von chronischem Sicchthum, hervorgerufen durch Einathmung von Blausäure*, Nürnberg, 1888) describes the case of a young woman, who, while engaged for a week silvering and polishing metallic antiquities with a double compound of cyanide of silver and potassium, became ill, with difficult breathing, headache, loss of appetite, irritation of throat, cough, much thirst and great weakness, so that she was compelled to take to bed. From the 27 of March, 1886, onward, she developed a chronic illness, which about the middle of October following was characterized by feeble heart, distinct ataxy, impaired sense of taste, a shuffling gait, a well-marked diminution of muscular power and anemia. Electrical treatment was then begun, and the patient steadily improved, but was not quite restored to health even by the end of the year 1887. Martin ascribes the poisonous effects to the inhalation of prussic acid.

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is of any real value and which may be considered an advance in or a contribution to the knowledge gleaned by centuries of records, has escaped his notice. The book is written in a didactic style, as might be expected of one who for a quarter of a century has been a teacher; but this style never becomes dogmatic, and therefore well befits the subject. The illustrations are particularly good.—*St. Louis Medical and Surgical Journal*, May, 1887.

Burnett on the Ear.

The Ear: Its Anatomy, Physiology and Diseases. A Practical Treatise for the use of Medical Students and Practitioners. By CHARLES H. BURNETT, A.M., M.D., Professor of Otology in the Philadelphia Polyclinic and College for Graduates of Medicine; President of the American Otological Society, etc. Second edition. In one handsome octavo volume of 585 pages, with 107 illustrations. Cloth, \$4.00; leather, \$5.00.

All the good qualities of the first edition are retained in the second. The rapid, and in some cases eminently practical advances in the science of Otology, which have taken place in the last seven years, have been duly regarded by our author, who in his revision has made many alterations, omitting obsolete material,

and entirely rewriting the text of important subjects. We sincerely believe that the earnest and zealous labors of our author have made his work more than ever worthy of the kind reception accorded to the first edition.—*Edinburgh Medical Journal*, June, 1885.

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FORTY-EIGHTH SESSION, 1888-89.

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REV. HENRY M. McCracken, D.D., Vice-Chancellor.
CHARLES INSLEE PARDEE, M.D., Dean of the Faculty; Professor of Otolaryngology.
J. W. S. ARNOLD, M.D., Professor Emeritus of Physiology and Histology.
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THE PRELIMINARY SESSION will begin on Wednesday, September 19th, 1888, and end October 2d, 1888. It will be conducted on the same plan as the Regular Winter Session.

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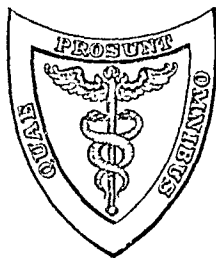
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revision has been carefully carried out, and much new matter added. Dr. Burnett's work must be regarded as a very valuable contribution to aural surgery, not only on account of its comprehensiveness, but because it contains the results of the careful personal observation and experience of this eminent aural surgeon.—*London Lancet*, Feb. 21, 1885.

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The task of criticism becomes an actual pleasure when such a text-book falls into the critic's hands. Mr. Juler has written a book which, it seems to us, must prove the very best manual upon the subject in

the English language. The book will give a sound and well-arranged knowledge of the diseases of the eye to any one who will make himself its master.—*New Orleans Medical and Surgical Journal*.—Feb. 1885.

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OCTOBER, 1888.

THREE SUCCESSFUL CASES OF CEREBRAL SURGERY.
INCLUDING (1) THE REMOVAL OF A LARGE INTRACRANIAL FIBROMA ;
(2) EXSECTION OF DAMAGED BRAIN TISSUE; AND (3) EXSECTION
OF THE CEREBRAL CENTRE FOR THE LEFT HAND;
WITH REMARKS ON THE GENERAL TECHNIQUE OF SUCH OPERATIONS.¹

BY W. W. KEEN, M.D.,
PROFESSOR OF SURGERY IN THE WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA ; SURGEON TO ST. MARY'S,
ST. AGNES'S AND THE WOMAN'S HOSPITALS, ETC.

CASE I. *Large tumor in the cerebrum probably arising from an injury at three years of age; epilepsy and hemiplegia at twenty-three; tumor removed at twenty-seven; hernia cerebri; recovery; probable cure of epilepsy.*—Sent to me in May, 1887, by Dr. M. L. Davis, of Lancaster, Pa., with the following history.

"T. D., aged twenty-six, carriage-maker, married at twenty-three, has one child in good health; father died at twenty-seven from an injury to the spine; mother and maternal grandmother (aged eighty-three) living and in good health; the other three grandparents died at fifty-seven, seventy and sixty, the last of consumption.

"At the age of three he fell out of a window, a distance of several feet, striking his head upon some bricks. His mother says there was no cut, but his forehead was indented. He lay motionless for a long time as if he were dead, and remained comatose for an hour. His head became swollen and blue. Dr. John L. Atlee saw him the next morning and, as the child was moderately bright, thought he was merely stunned, as there was no evidence of injury except the swelling. The recovery from the injury was slow but apparently complete. The indentation was on the front part of the head, but the mother does not remember clearly on which side. The patient says his mother told him it was on the left side.

¹ Read before the American Surgical Association September 18, 1888.
VOL. 96, NO. 4.—OCTOBER, 1888.

"At five years of age a discharge from the right ear followed an attack of measles. This discharge has continued at intervals ever since, and has impaired his hearing. It is at times offensive, although accompanied by but slight pain. In August, 1886, the left ear became partially deaf. During his boyhood he was considered dull, was very forgetful and impulsive though not quarrelsome; he complained considerably of headache; no history of syphilis can be obtained and there is no visible manifestation of it after the most careful examination. His general health was good, excepting the frontal headaches, which were moderately severe. In the autumn of 1884, he became ill with neuralgic pains and was "all broken up." These symptoms gradually increased until February, 1885, when he was seized with violent epileptic attacks followed by intense pain in the head which lasted several days. These fits occurred once or twice a week, and the attacks of pain in the head increased in violence and duration. By the end of April the right arm became paralyzed, and the right leg, and the right side of the face, in the order named, the paralysis making gradual progress.

"My first visit was made on June 8, 1885. While hitching my horse, I heard him screaming with neuralgic pain. The pain was located on the left side of the head, and started about the supraorbital ridge, darting back to the occiput, but was more intense at the middle of the left side of the head. Inspection disclosed a small scar at this point. Pressure increased the pain. The entire right side of the face was paralyzed; both motion and sensation being affected, though motion had suffered more than sensation. The right pupil was largely dilated and did not respond to light; the left one was normal and responsive. The sight of the left eye was good, but whether perfect or not I could not determine. The vision of the right eye is imperfect; aphasia is a prominent symptom. He made marked efforts to converse, but could not; the pulse was 60 and irregular; respiration 16; tongue heavily coated; obstinate constipation; anorexia; insomnia; no fever.

"*Diagnosis.*—Pressure upon the anterior lobe of the left hemisphere involving the third convolution, extending backward, from exostosis, tumor or possibly only thickening of the dura mater; syphilis excluded.

"*Treatment.*—Iodide of potassium and arsenic with laxatives.

"The pain began to diminish and at the end of three weeks he was nearly free. Arsenic was suspended by July 1, 1885. Paralysis began to improve in the leg and in the arm. Aphasia was the last to improve, so that when he had regained the use of the leg and arm and could come to my office (a mile distant), he would bring pencil and paper and write any questions he desired to ask. The questions were, however, much mixed. About this time his eyesight began to fail until August, 1885, when he became totally blind, first in the right eye and later in the left. At the end of two months his left eye gradually improved so that he could again walk in the streets. The right eye remained blind for several months, when suddenly the sight returned in it, remained for a few hours and left as quickly as it came. This phenomenon has since occurred frequently, not only in the right eye but also in the left. He was annoyed, also, very much by flashes of light and mist before the eyes, accompanied by vertigo and constipation.

"The epileptic fits continued with diminished violence and frequency until November, 1886, since which time he has been exempt. His urine has been frequently examined, but there was found neither albumin,

casts nor sugar. In the fall of 1886 he was at Jefferson Hospital, but returned after three weeks. His mental condition has been considerably affected; his judgment is not good; memory fair; general mental powers slow; at times peevish and fretful."

May 30, 1887. Present condition. Headaches moderately severe, generally lasting from half an hour to several hours, and occurring from two or three in a week to one in several weeks. His speech is hesitating and slow and he has a feeling as of being dazed. He is very anxious to have an operation done if it holds out the slightest possible chance of relief. When he has spasms "hot air seems to rise from the stomach to the nose;" the eyes become dim and twitch toward the right followed quickly by the head, which is turned in the same direction. During this time he is mostly conscious and feels as if smothered; unconsciousness soon follows. As soon as the "hot air" is felt the right hand closes tightly, the forefinger first then the thumb. He cannot tell whether the wrist, shoulder, and elbow are flexed in succession. The face also is affected (whether one side or both he does not know) and turns to the left, so that it seems "as if he were going to be turned entirely round to the left." These attacks last from five to ten minutes. Sometimes he has minor attacks with the same symptoms moderated without loss of consciousness. He has a good movement of the bowels every day; appetite ravenous; for four or five weeks has had night sweats almost every night, especially on the legs; has lost flesh since March 1st; his usual weight is 135 pounds, present weight 122 pounds. The gait would not now show any paralysis; his hand squeeze is about equal; the leg-thrust of equal force, as judged by resistance to my hand; the face is not paralyzed; the right ear has a slight discharge, but is the better hearing ear of the two; his deafness for conversation, however, is only moderate; the right pupil is slightly larger than the left. The right eye deviates slightly upward and outward. An examination of the head shows a small scar a quarter of an inch long, three and three-quarters inches above the middle of the zygoma and one and five-eighths of an inch in front of the bi-auricular line. The skull feels slightly irregular as if the bone had been injured; no marked depression; not now tender or painful, nor is there any sensation located at this point preceding the fits. The urine is rather highly colored and slightly clouded, the specific gravity 1023, no albumin, no sugar, a few crystals of uric acid; normal mucus.

June 7, 1887. While in the hospital he had six fits to-day. Dr. Moylan saw the fourth from the beginning. The eyes were staring, with the whites turned up, the eyelids moved rapidly up and down; the right pupil was larger than the left; the head was turned far to the right and the mouth drawn in the same direction; the four limbs were flexed throughout. He was lying on the left side, with the feet turned to the left, and rigid. This condition soon passed into marked convulsive efforts. The attack lasted two minutes. The face was normal in color at first but soon became very blue. There was no frothing at the mouth. A few days later Dr. Charles A. Oliver saw him in the convulsive stage of an attack which was described as follows, together with a careful ophthalmic examination:

"At the request of Dr. Keen I examined T. D., and obtained the following results:¹ The pupil of the right eye was four by five mm. in

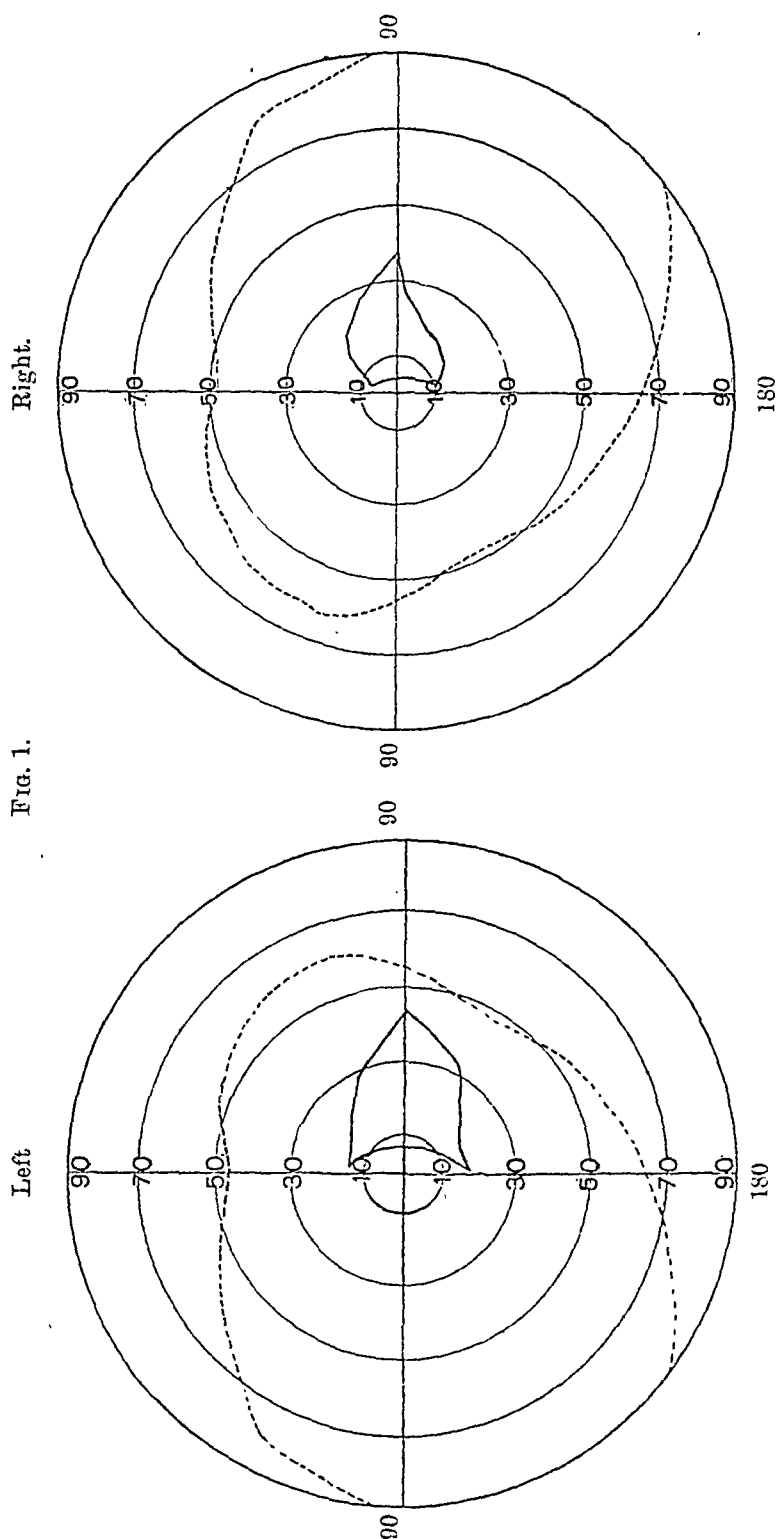
¹ This merely constitutes a *résumé* of sufficient fulness to render the case complete, reserving the discussion in extenso (in connection with other cases observed with Dr. Keen) for a separate communication.

size upon exposure to broad, diffuse daylight, whilst the pupil of the left eye was three by four mm. in size upon the same exposure. Both irides responded separately to light stimulus and accommodation, the right pupil becoming larger in all directions after a second's continuance of stimulation to what it had been brought by the first impulse of light. The right iris was slightly the more sluggish, each responding only when the stimulus was placed in small areas to the right of the eyes. The test for accommodation, which was made by approximating the finger and having the patient steadily gaze at it, taking care to keep it at the point of greatest visual acuity in the visual fields, showed that the irides were exceedingly sluggish. Both corneæ were seemingly equally sensitive, and a difference of six-tenths of a degree F. in the temperatures of the two lower culs-de-sac could be differentiated. (Right = 97.7° F., and Left = 97.1° F.) In a state of rest, fixation was accomplished with the left eye, the right being turned up and out. Careful examination showed that this condition was caused by a paresis of the right internus coexistent with paresis of the left inferior and superior recti; all of the other attached external and internal muscles being intact. In addition, there was a paresis of the inferior fibres of the orbicularis on both sides, more marked on the left; the left lower eyelid being partially raised by the corresponding face muscles. Vision with the right eye was reduced to the counting of fingers at six inches, about four degrees to the outside, whilst vision with the left eye, which was also eccentric, was reduced to the counting of fingers at thirteen inches, about six degrees to the inside. Fields of vision gave the following results: left-sided homonymous hemianopsia superadded to large central scotomata; leaving two irregularly contracted right-sided fields in which nothing but form could be discerned.

"The ophthalmoscope showed in each eye a few faint vitreous opacities—almost complete post-neuritic atrophy with greatly diminished retinal circulation (the arteries being reduced to mere threads), much more marked on the left side; both choroids woolly and granular; whilst in the right retina there was a small isolated brilliant cholesterin crystal. Both disks gave decided characteristic appearances of previous choking.

"Five days later the patient was seen in the convulsive stage of an epileptoid attack. He had been complaining of frontal headache, accompanied by 'bad taste,' followed by vomiting. When first seen there were a series of irregular clonic contractions, which were marked in both lower and upper extremities of the right side and trunk, the head being turned toward the right. The mouth was drawn away from the left side. The right eye was fixed toward the upper temporal side, whilst the left deviated almost directly inward. During this deviation a slight horizontal nystagmus developed itself, which, as the general clonicism grew less and less, rapidly diminished, the excursions becoming greater in length and less frequent in action, with a steadily increasing tendency to fall into the ordinary state of rest, until in four minutes from the time when first seen, the oscillations had ceased altogether. During the nystagmic action the axis of the right eye was directed up and out, and the globe gave a slight twist downward upon its return internal movement. At the time of the convulsive seizure the right pupil was dilated to six by seven mm. in size, whilst the left pupil was enlarged to but four by five mm.; each pupillary area preserved its original long axis. The lower lids drooped during the clonic state, whilst the upper lids became con-

tracted, giving the eyes a staring appearance. Throughout this time the skin of the lids and the conjunctival mucous membranes seemed to



These fields were obtained with a McHardy perimeter in the ordinary way, except that the patient was made steadfastly to fix his eye upon the central point by means of a continuous noise (tapping with a pencil tip upon the central white button, the act being rendered more sure by an assistant who continually watched that the eyeball was not moved. The surgeon's finger was carried in different directions along the perimeter arc, and when first recognized, the registry was taken.

be sensitive to touch and pain. It was now noticed that the patient profusely sweated upon both sides, and that there was equal thumping pulsation of the external carotids. At the moment of cessation of the nystagmic motion, and without the patient being spoken to, or aroused in any way, the right fissure closed and the left upper lid began gradually to fall over the eyeball, the pupil contracting to two by three mm. on the left side and three by four mm. on the right. At this time both irides were mobile to strong light stimulus thrown from the areas of the retained fields; the iris of the right eye giving the lesser reaction. Upon the patient being aroused (he, from appearances, never having entirely lost consciousness) the upper lids elevated, the right eye fixed to my position upon his left side, the left eye turned out and the pupils dilated to normal; the eyes, head, trunk and extremities still remaining in the same positions as during the convulsions. By still further concentrating the attention—*i. e.*, by talking to him in a loud and sharp tone of voice and causing him, at the same time, to gaze into the broad, diffuse daylight, his pupils contracted again to the sizes noted at the time of the cessation of the nystagmus, returning to their normal relative areas a moment later. Urine was examined at the time, giving negative results."

The patient was also examined by Drs. S. Weir Mitchell, Morris J. Lewis and George C. Harlan. The latter gives the following result of the examination of his ears. His examination of the eyes coincided with that of Dr. Oliver.

"A. D., partially deaf since early childhood after an attack of measles, still occasional discharge. H. = watch at four inches; lower posterior quadrant membrane destroyed, the remainder much thickened. The drum suppurating slightly.

"A. S., deafness came on suddenly (?) one year after a convulsion in 'consequence of a dose of medicine'; watch not heard on contact; tuning-fork not heard at all through air, but normal by bone conduction through mastoid. Membrane thickened and much contracted. Eustachian tubes apparently not patulous. Deafness evidently due to local changes, not to any cerebral complications."

For reasons given later under head of remarks, it was decided not to do any operation at present, but if, in the fall, after careful treatment under Dr. Davis, especially with the iodides, he should not be better and still desire an operation, that I should open his head. He returned home the middle of June. He had an epileptic fit on June 24th, July 26th and August 13th.

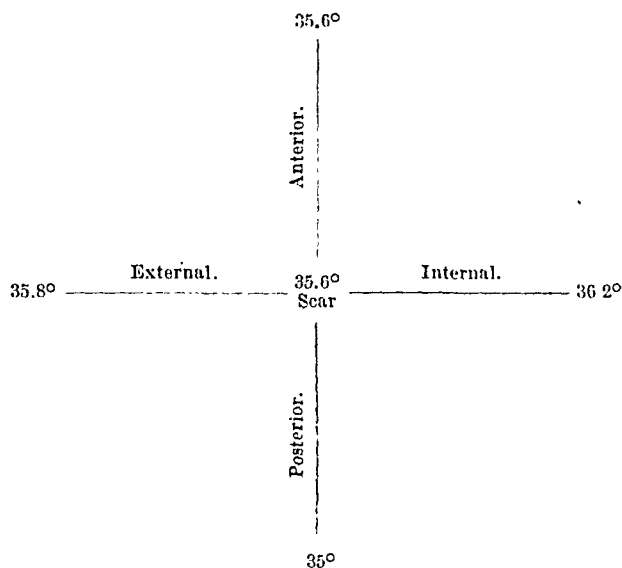
In the fall of 1887 I received several letters written by himself, as well as one from Dr. Davis, desiring an operation. The patient himself was quite urgent, and accordingly came to the city to St. Mary's Hospital in December.

Dec. 8, 1887. The scar finally settled upon as that resulting from his accident at three years of age (though his mother had stated his scalp was not cut), was a quarter inch long and half an inch above and in front of the superior stephanion, two and a quarter inches to the left of the middle line, and three inches behind the external angular process. It was now tender both to pressure and to a slight blow. The temperature over the scar on this side of the head was 95.5° F., and in a corresponding position on the right side 94.4° F. Sway antero-sinistral half an inch each way. Dynamometer, right hand 30°, and

left 35° . Knee-jerk, left, normal; right, subnormal. Reinforcements normal on both sides. Tactile sensibility in both hands normal.

14th. Temperature over the scar 95.5° F; right side, corresponding point, 95° F. Urine, specific gravity 1028, no albumin, no sugar.

15th. An attempt was made to see if the scar was the site of the highest temperature, and the result was as follows: the temperature (Centigrade) was taken over the scar and at four other points, two inches in front of and behind the scar, and two inches distant laterally.



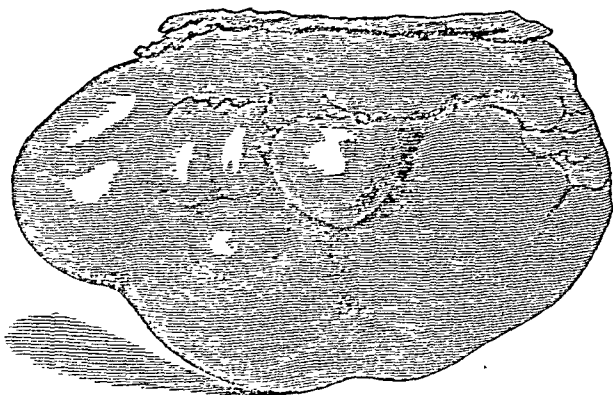
Preparation.—The following was the method of preparation for this and all the other operations here related: The room was uncarpeted, and contained only necessary furniture. The walls and ceiling were carefully wiped the day before, and all the wood-work and furniture, as well as the floor, were thoroughly scrubbed with carbolic solution. New, clean sponges were used that had been kept in carbolic solution, but were used with sublimate solution 1 : 1000 at the operation. In the first operation the instruments were all boiled for two hours, but in the subsequent operations this was omitted, but they were placed in a carbolic solution 1 : 20 for a half hour, then were transferred to boiled water that had cooled sufficiently to permit their being handled. In the first operation also, the spray of carbolic acid was used in the room all the morning of the operation, but not during the operation or at any of the redressings. At the later operations the spray was entirely omitted. The day before the operation the patient's head was shaved, then scrubbed with soap and water, then with ether and covered with a wet sublimate dressing of 1 : 1000, which was retained in its place by bandages until the operation began, when the ether and sublimate washings were repeated. The hands and nails were, of course, most carefully cleaned and disinfected by soap and water, alcohol and sublimate solution.

Operation at 1 P. M., December 15, 1887 Present, Drs. Grove, Mears, Roberts and the resident hospital staff, Drs. S. Weir Mitchell, Mills, White, Oliver and Taylor, and Messrs. Le Conte and Goodwin, medical students. Ether was used. An incision was first made through the scar down to the bone. By a gouge a little nick was then made in the bone so as

to fix the site of the scar. No scar was found on the bone when uncovered. This nick was extremely useful, as alluded to later. A large semi-elliptical flap was then cut three and a half inches across in both directions, the convexity posterior for drainage. The hemorrhage from the flap was very abundant and required twelve to fifteen hemostatic forceps, though eventually only four or five vessels required ligation. The bone, also, when bored bled freely. This ceased without treatment.

A one and a half inch trephine was then applied so as to include the site of the scar, the lower edge of the trephine just including the temporal ridge. In attempting to remove the button the dura was found to be adherent, especially to its lower half. Part of the bone was markedly thinned by the pressure of the tumor. When the button was removed the dura was found to be covered with a velvety outgrowth one-sixteenth of an inch in thickness. There was normal softness at the anterior portion, but most of the trephine hole disclosed a hard mass extending beyond its limits in all other directions. A second button was then removed directly posterior to the first. The dura under the latter was markedly protuberant but did not bulge, and the bone more eroded than was the first. A hypodermatic needle showed a deep mass which required considerable force to penetrate. The entire tumor was evidently not yet uncovered. Rongeur forceps were then used to enlarge the bony opening upward and downward until it measured two and a half inches transversely by three inches antero-posteriorly. The upper margin reached to within three-quarters of an inch of the middle line, when the border of the tumor was fully exposed. The bone at this part was greatly thickened. The lower border of the tumor dipped behind the squamous portion of the temporal bone, which was not thickened, but the tumor reached to half an inch below the edge of the bony opening, as was discovered later. On incising the dura one-quarter inch from the edge of the bone it was found to be adherent to the subjacent mass slightly at the margins, but increasingly so toward the site of the scar as a centre. I therefore severed its connection all round, and was able

FIG. 2.



Appearance of the tumor with dura attached. Natural size. (Drawn by Dr. John M. Taylor.)

now to enucleate the growth by the finger with but very little force, and lift it out from the underlying brain tissue and from the fossa behind the squamous portion of the temporal bone.

Description of the tumor.—Weight three ounces forty-nine grains. Displacement two and a half ounces of water. Size two and seven-eighths by two and a half inches and one and three-quarters inches in thickness; seven and a quarter and six inches in circumference in the two axes. Its long axis lay nearly at right angles with the median line.

Appearance.—Non-adherent to brain tissue; intimately united with the dura; dura and pia especially thickened under the scar, but gradually grew less and less adherent as the distance from the scar increased. In the region of the scar the dura was covered with a velvety fibrous growth. The tumor was very firm to the touch and very dense in texture; nodular on its surface. On cross section and at right angles with the long axis very firm; color pinkish-white; showing divisions into pyramidal compartments, converging toward a centre near the outer surface. Corresponding to the scar was a moderate depression on the surface of the tumor. The two disks of bone which were removed were very much and irregularly thinned, corresponding to the irregularities on the surface of the tumor.

FIG. 3.

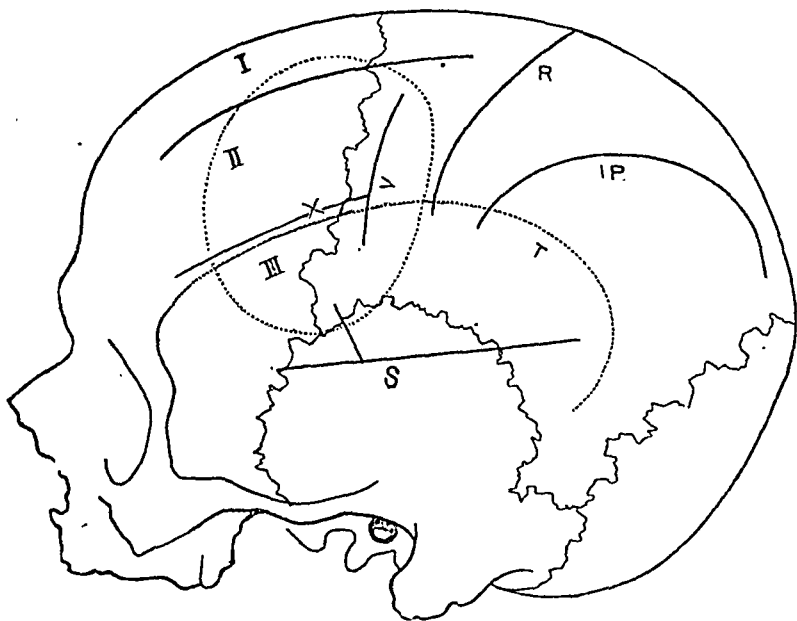


Diagram of the skull showing the site of the tumor.

S, Fissure of Sylvius. R, Fissure of Rolando. IP, Intraparietal sulcus. V, Vertical or precentral sulcus. T, Temporal ridge. I, II, III, the first, second, and third frontal convolutions. The oral dotted line represents the tumor, the cross (X) the site of the scar.

The situation of the tumor was afterward exactly determined thus: The first bone disk was accurately fitted to its corresponding irregularities on the tumor. The nick in this bone disk was at the site of the scar, and the position of this on the skull was one-half of an inch above and in front of the superior stephanion. By measuring from the nick to the edges of the tumor, anteriorly, posteriorly and transversely, and transferring these measurements to a skull from a point corresponding to the scar, its exact location was fixed. On this skull the chief fissures

of the brain were also marked. It was found (Fig. 3) that the tumor reached backward nearly to the fissure of Rolando, forward (two and a half inches) into the bases of the three frontal convolutions, especially the second and third, upward into the external part of the first frontal convolution and downward nearly to the fissure of Sylvius. Taking one of Dalton's sections and applying on it the measurements of the tumor, Fig. 4 shows the region involved in depth in the normal brain.¹

FIG. 4.

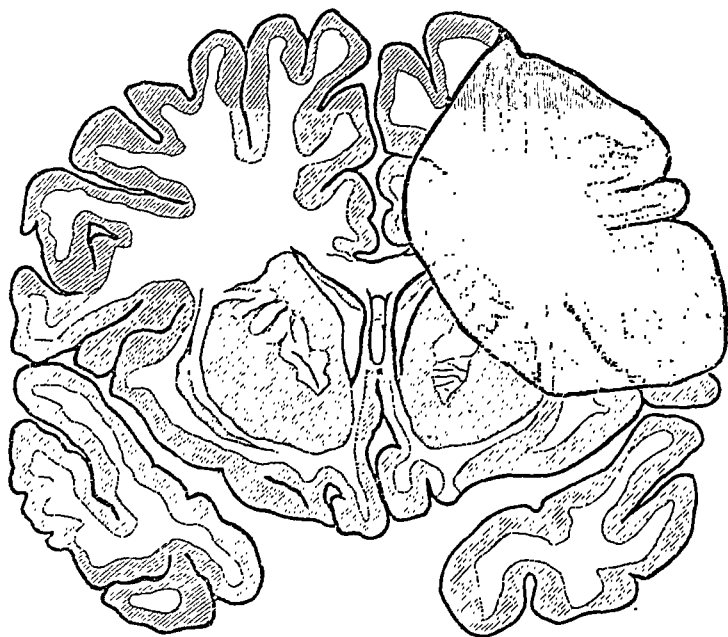


Diagram to show the depth of the tumor in Case I. The shaded part represents the tumor. The section is from "Dalton's Topog. Anat. of the Brain," Series C, Plate VI. (Drawn by Dr. S. C. Wood.)

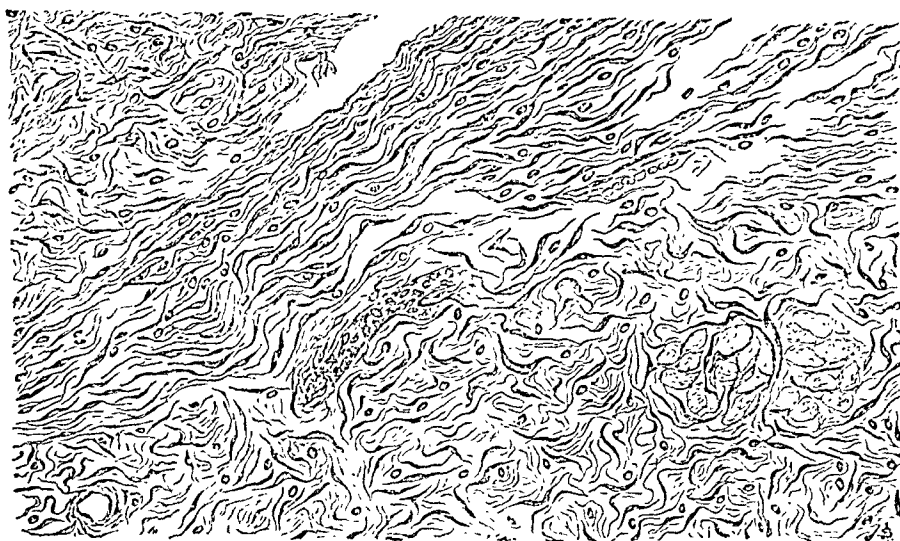
Drs. Allen J. Smith and F. X. Dercum kindly examined the tumor microscopically, and found it to be a fibroma "showing a tendency toward an arrangement in bundles of fibrous elements. To the right in the drawing (Fig. 5) is a transverse bundle of fibres having a peculiar translucent appearance as of some secondary degeneration." They deemed the tumor to be an old and not a recent growth.

No vessels required ligation in the dura, but several large veins of the brain poured out abundant streams of blood during and after enucleation of the tumor. I tied three or four of these with difficulty. Several times, in attempts to secure them, the ligature cut through, either from too tight tying, or tore the vessel completely by slightly unequal traction, either on one end or the other. Most careful gentle traction, evenly applied to the ends of the ligature, just sufficient to arrest the bleeding, answered best. The material used was Kocher catgut. The hemorrhage was still rather profuse. The wound was therefore douched with hot

¹ By an error of my own this is a trifle too deep.

water (115° to 120° F.), and direct pressure by sponges was tried. The bleeding was thus finally controlled.

FIG. 5.



Microscopical appearance of the tumor in section. (Drawn by Dr. Allen J. Smith.)

The bottom of the cavity occupied by the tumor was softened, and in part shreddy, white brain tissue; the margins of the cavity, where disclosed, showed apparently healthy brain convolutions covered by the pia with large dilated and tortuous veins. During the time occupied by controlling the hemorrhage, the cavity left by the tumor had been filled up nearly one-half by the resilient brain tissue. Rubber fenestrated drains were introduced at two points in the posterior border of the wound. A bundle of horse-hairs was then carried from one opening to the other across the wound. I had intended, if possible, to replace the buttons of bone as well as the small fragments that had been kept in a bowl of carbolyzed solution (1 : 40) which was placed in a basin of water maintained at a temperature of 100° to 105°, but the sacrifice of the dura prevented this step. The scalp wound was next united, and a small sponge, with a larger one over it, was placed upon the flap so as to depress it and to some extent obliterate the cavity with a view to prevent hemorrhage, and facilitate union with the flap. A thick dressing of sublimate gauze, rubber dam and muslin bandage completed the dressing.

The operation lasted nearly two hours. Most of this time was required for trephining and checking the hemorrhage. The patient bore the shock and large loss of blood very well. No motor symptoms occurred during the operation. When placed in bed he rolled persistently to the left side and drew both legs up. He vomited four times between 3 and 9 P.M.; probably this was the cause of some slight oozing next noted.

Dec. 15, 9 P.M. Perfectly conscious; called me by name. Aphasia somewhat marked. If pricked by a pin in fastening the bandage, he always said, "the grasshopper picketh." The pupils were equal and

rather dilated; no paralysis; slight pain. Morphia was given as needed, and small doses of lime water and milk given every two hours. As the dressing was saturated with blood, it, as well as his night shirt, was changed. He sat up in bed voluntarily and thrust both arms through the sleeves of the shirt.

From this date for a week the temperature varied from only a little above to a little below 100° F. The catheter was required for only one day. He suffered little or no pain and was hungry. The dressing had to be changed twice a day for two days, as it was saturated with blood or bloody serum. But his aphasia increased markedly and the flap became much rounded upward. By the third day the large clot, which had formed in the wound cavity, disintegrated; part escaped by the drainage tubes, and part, with some shreddy cerebral tissue, by pressure and gentle washing out by sublimate solution followed by cooled, boiled water. The amount of the clot I estimated at four ounces, thus exceeding by one and a half ounces the volume of the tumor. The aphasia diminished almost immediately. One tube was removed on the fourth day. Four of the eleven sutures were removed on the fifth day, and three more by the seventh, nearly all of the wound having united by first intention. His mental condition was continuously clear. No anæsthesia when tested by the æsthesiometer.

The next week was full of peril. His temperature rapidly rose, till, on the tenth day, it reached 104.2° F., but by the fourteenth day was down to the normal. All but two sutures were out by the eighth day, and the second drainage tube shortened to one inch, and all the horse-hairs out but two. But on the eighth day his aphasia, which had nearly disappeared, began to increase again; his right lower face was less mobile, and the catheter was again required. Marked and increasing bulging of the flap was seen, and on the ninth day, without sensory disturbance, his right arm was noticeably paretic, the left showing no change. The dressings were saturated with a watery discharge, but no pus. The second drainage tube was out. By the tenth day the face and arm were distinctly paralyzed; speech very thick, and later unintelligible; aphasia marked; deafness increased. Mind clear throughout. The following day the right leg was paralyzed. Along with the high fever and other symptoms, apparently due to pressure, he had a sharp diarrhœa, with very fetid stools. His bowels had not been moved till a week after the operation in spite of enemata and mild laxatives.

Fearing an accumulation of pus as the cause of all the danger, I reopened the wound with my finger to over half its extent. This disclosed a mass of tissue somewhat discolored, swollen, soft and friable, not very vascular, resembling white brain tissue. The microscope showed no pus, but only fatty and granular cells and *débris*. The sublimate dressings were continued. The diarrhœa was met with opium and acetate of lead and bismuth. His liquid diet had not been changed, but all food was now sterilized. Quinine (10 grains) and moderate doses of brandy were also given.

By the end of the second week the diarrhœa and fever were gone, aphasia and deafness diminishing, and the flap was adherent to the brain tissue, which had now formed a slight hernia cerebri through the crescentic opening. He was so much better that some oysters were given and greatly enjoyed. During the third week his temperature varied but little from the normal. The right leg improved very much, the

arm and face remaining paralyzed till the end of the week,* when the face first began to regain its mobility. The aphasia lessened also. The hernia cerebri had increased considerably. Soon granulations sprang up all over its surface, and a small amount of distinct pus was discharged daily. The dressings had to be changed daily, chiefly on account of a limpid fluid which escaped in abundance from two pin-hole openings in the hernia cerebri. This was not glairy, and in appearance resembled cerebro-spinal fluid. This abundant, limpid discharge only ceased at the end of the fifth week.

In the fourth week another sharp rise of temperature took place for two days, up to 102.6° F., and with it a marked purulent discharge from the right ear and constipation. The attack yielded to liquid diet, laxatives and antipyrin, with washing out the ear. His aphasia was now nearly gone, and the facial palsy considerably lessened. On the twenty-seventh day he moved his right arm once at the shoulder only, but could not repeat the movement; on the twenty-eighth he could bend his elbow, the finger movements being barely perceptible. The right nails (as shown by staining with nitric acid) had grown decidedly less than the left. He was hungry and was sitting up.

In the fifth week the temperature twice rose quickly for two days, and one day to 102.4° and 102° F. respectively, apparently due to constipation, for an enema caused a quick decline. With each of these attacks of fever his aphasia and the palsy of the right arm immediately increased, and as quickly bettered with the fall. By the end of this week the extent of motion at the shoulder and elbow was complete, though much feebler than normal, but flexion of the fingers was only perceptible. By the fortieth day the finger flexion had increased to the normal in extent, but only to about half strength; he could extend the fingers slightly, but could not repeat the extension, though he could the flexion. At the wrist he had flexion, but not extension. On the forty-second day he could extend the wrist, and from this time on he steadily gained in extent and power of motion in all directions.

The temperature now fluctuated but little from the normal till he left for home. The hernia cerebri had been strictly let alone, only the sublimate dressings being changed, at first daily, on account chiefly of the watery discharge until the thirty-seventh day, after which time they were only changed every two to three days, the watery discharge having then ceased. The hernia was covered with granulations, but, as they showed very little tendency to cicatrize, on the thirty-fourth to the fiftieth day thirty-four skin-grafts from his arm were used to hasten the process. Of these, all but four adhered; several that became detached during the dressing were immediately reapplied and lived. The potassio-tartrate of iron was used for some days with advantage under the sublimate dressing, and removed a membranous film which existed between the grafts. On the seventy-first day cicatrization was complete. The hernia had been for some days nearly on a level with the skull. The next dressing was on the seventy-fifth day, when the site of the hernia, instead of being an elevation, had suddenly changed to a deep hollow.

March 8 (eighty-fourth day). Went home well. Nails on the right hand still half stained with nitric acid; on the left a barely perceptible band. Surface temperature, left side, one-half inch anterior to the old scar, 95.1° F.; right, corresponding point, 96.4° F. Dynamometer, R. 23° , L. 30° . While using the dynamometer the depressed scar rose to the

level of the skull; any marked expiratory effort or even leaning forward to the horizontal position has the same effect. Front tap marked on both sides. Knee-jerk: right much diminished, left exaggerated. Elbow-jerk: right side exaggerated, left diminished. The hernial scar is a crescent, mottled by the skin grafts, two and three-eighths inches long, seven-eighths of an inch wide and five-eighths of an inch deep. Mind clearer than before the operation.

April 19. Dr. Davis writes that he had an epileptic attack yesterday at breakfast. The attack was slight and came on slowly, the head and body turning to the right. Otherwise well and gaining flesh.

I owe much to the intelligent care and faithfulness of Dr. J. C. Heisler, the surgical interne, and he made most of the observations of the temperature, reflexes, etc. I must also express my obligations to Drs. Davis, Oliver, S. Weir Mitchell, M. J. Lewis, William J. Taylor and J. M. Taylor for help in many ways in all three cases reported.

I append Dr. Oliver's later observations of his eye symptoms. These, with observations from the other two cases, he will publish in extenso later.

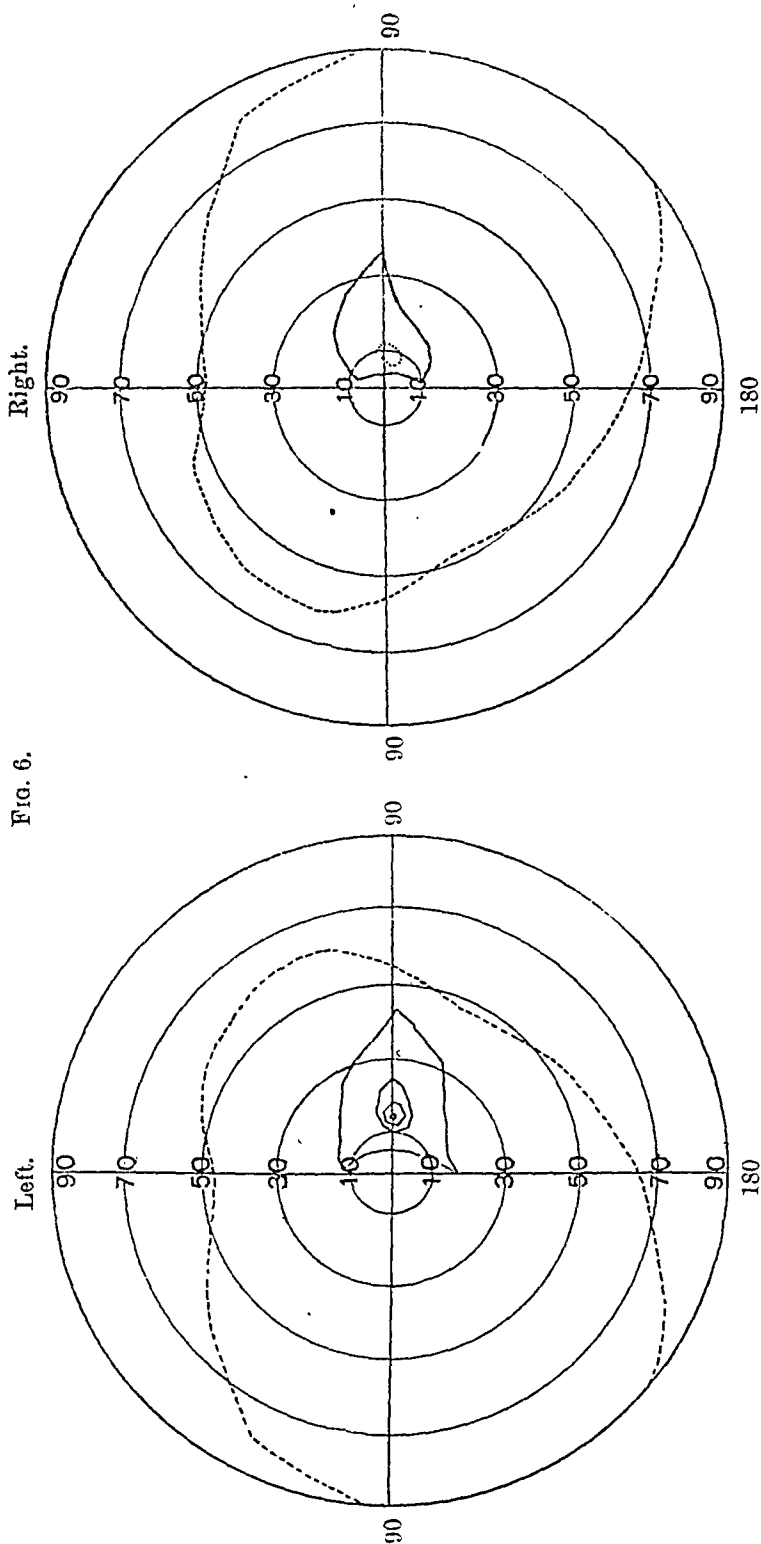
"Immediately following the operation, and at stated intervals of two weeks' duration each, the eye-grounds were carefully reexamined, the state of the muscles retested and the conjunctival sensibility retried, but in no instance could any changes be found. Of intense interest, however, were other changes. Two months after the operation the fields of vision, although retaining the same positions and embracing the same areas, were found to have gained partial color definition. The left field¹ showed distinct and well-mapped areas for yellow and blue, with a small spot in which red was designated as 'lead,' whilst the right field gave a trace of color differentiation in a small central area. On the same date, the point of best sight with the left eye—even according to the patient's account—had gradually increased to qualitative vision; letters of number thirty dioptre type being properly named when swept across the situation of the best projection in the eccentric field. With the right eye nothing definite could be determined, the patient constantly twisting his head in various positions and suddenly exclaiming, from time to time, 'I see a black mark,' or incorrectly calling an exposed letter.

"Careful study of these symptoms, in association with the history, shows that there were most probably two distinct factors in their production: First. An irritative cortical and subcortical growth occupying a position in the left motor zone, encroaching upon, and, in fact, altering the centres for the right upper and lower extremities, the centres for lateral movements of the head and eyes to the right with elevation of the eyelids and dilatation of the pupils and the centre for elevation of the right angle of the mouth; beside indirectly pressing upon and perhaps changing the left visual and auditory centres or their efferent strands² Second. A resultant destructive basilar lesion including portions of both second nerves posterior to the chiasm, parts of both third nerves, filaments of the sensory and motor branches³ of both fifth nerves

¹ In writing to me before the operation the patient, referring to his eyesight, by a curious error called this the "left hand."—W. W. K.

² It is probable that the right visual and auditory centres or outgoing strands were in some way impinged upon, possibly by the brain mass itself.

³ The motor involvement of this nerve is, of course, questionable, if the lesion or its indirect results are supposed to have gained access to the nuclei of the motor oculi.



Here four millimetre squares of white, yellow, blue, red and green were fastened in turn upon the carriage of the arc and wheeled in consecutive order into the areas of recognition. In the left eye, white gave the largest area inside of the original form field, followed by yellow and blue that occupied smaller, though seemingly similar, spaces. Red, which was termed "lead color," gave the smallest field, and was designated as "blue" throughout the blue field, before reaching its own area. Green was never recognized, being called "yellow" inside of the yellow field. No scotomata could be obtained throughout all of the areas. The field of the right eye showed a small area just inside of a very doubtful blind spot, in which yellow, red and green were termed "bluish" or "blue," blue being properly designated in these positions.

and both eighth nerves,¹ apparently more profound upon the left side during the acute attack upon account of the passing results of the co-existent irritant lesion, but in reality greater upon the right.²

"At first, although by the most careful scrutiny of the patient's person there could not be found any characteristic sequelæ, it was thought that an old gummatous thickening, with a subsequent basilar meningitis from acquired syphilis, would account for these two distinctive characters of lesion, and, in consequence, he was placed for a reasonable length of time upon large doses of the alteratives. This partially diagnostic treatment not producing any effect whatsoever in five months' time, the growth was decided to be of a different nature, probably traumatic in origin; and, after consultation, an operation seemed justifiable."

For two weeks Dr. Heisler made careful comparative observations on the temperature of the two sides of the body, the points selected being the axillæ, the brow, palms and legs; the results appear in the accompanying tables. The right side generally showed the lower temperatures, except in the palms, where the right was, on the whole, the higher. The temperature of the legs was about 1° lower than the rest of the body.

REMARKS.—I confess that I was very reluctantly brought to the conclusion not to operate when this patient first came to me. But the early history, as detailed in this paper, is largely corrected and pieced out by facts learned later, some of them even after the operation. When first seen, the site of the injury was extremely doubtful. Shaving the head disclosed scars, and the clinical history reported no scar of sufficient moment to be remembered. Even which side of the head had been injured was doubtful, and the most contradictory statements were made as to the initial symptoms of his fits. On the whole, the evidence was mostly in favor of the left side, but there were no local symptoms at or near the scar; the old suppuration of the right ear raised great doubts as to how far that might be the cause of a right-sided cerebral mischief, while, still further to complicate the problem, Dr. Oliver was of opinion that the ocular symptoms pointed to an old syphilitic lesion in spite of the denial of the patient. It seemed probable that there was a dual lesion, one the result of the ear disease, the other a still existing meningeal trouble, causing irritative discharges, which might be lighted up anew by any operation. But as no improvement came during several months of treatment, I decided, positively, to operate.

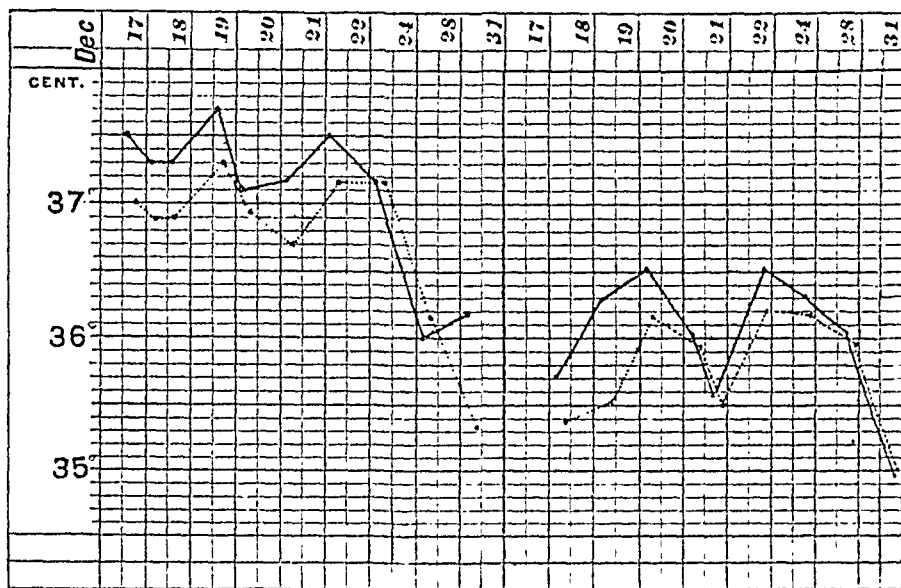
The diagnosis made by Dr. Davis was the one finally arrived at by all of us, the probability being in favor of tumor rather than of exostosis, or cicatricial thickening. This was based on the extent of the palsy, the

¹ A peripheral complication in the acute attack of catarrh of the right middle ear, early in life, should be remembered.

² These conclusions, which, of course, must remain sub judice until post-mortem evidence, are rendered still more certain by the results of the operation, where it seems probable that a long-standing, quiet and slowly growing neoplasm at last reached a sufficient size not only to encroach upon the adjacent motor zones and thus give rise, in part, to convulsive discharges, but to cause an actual inflammatory attack, during which symptoms of both irritation and destruction showed themselves; the former gradually lessening and the latter persisting.

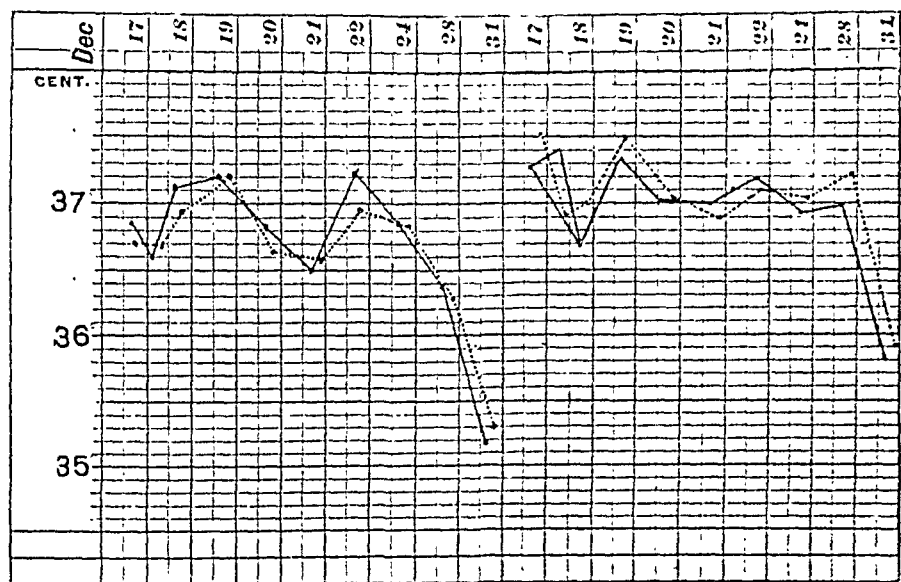
face, arm and leg being all involved, with aphasia; but I did not at all anticipate, nor do I think any of my colleagues did, that the tumor had

FIG. 7.



Brow.

Legs (near crest of tibia).



Axilla.

Palms.

Temperature of the left side shown by continuous lines.
 Temperature of the right side shown by dotted lines.

attained such enormous size. It is not surprising that so large a mass caused epilepsy, aphasia, complete hemiplegia, intense neuralgia, deaf-

ness in the left ear and blindness; but the wonder was that, excepting the ear and the eye symptoms, all the others had passed away except a slowness of speech and the epilepsy, and even this was much better. No function was absolutely destroyed, nor was there any external change in the bones or the sutures of the skull.

The clinical history, as well as the microscopical examination, seems clearly to show that the tumor began at the time of the injury and was slowly growing for twenty-four years until its removal. For twenty years it gave no material sign, although his rather sluggish mental state is undoubtedly to be ascribed to it. Then it suddenly burst out in disastrous activity. The regions that would be involved in a normal brain (Figs. 3 and 4) can hardly be deemed as at all an accurate representation of the localities actually involved, for, 1, its size is such that remoter parts must have suffered from the direct or remote pressure; 2, many of the sequels are due to resultant meningitis, especially at the base; and 3, as the brain and the tumor almost began life together and certainly "grew up" together, the brain accommodated itself to its intruder to a great extent, and its cortical centres and even the great basal ganglia were doubtless displaced into regions that we can only guess at. That the tumor reached very nearly to the lateral ventricle, and that later the resilient rising brain-layer between the tumor cavity and the ventricle broke down, is probable, not only by the sectional diagram of the relations of the tumor and a normal brain (Fig. 4) but also by the abundant and long-continued discharge of cerebro-spinal fluid. Sometimes this poured out almost in two distinct jets.

I was greatly astonished—it being my first experience—at the rapid filling up of the cavity left by the removal of the tumor. Within perhaps twenty minutes it was half filled up. In Cases II. and III. the same phenomenon occurred but only to a moderate extent, as was natural, there being little if any increased intracranial pressure. This expansion of the brain is no doubt of great use in bringing its surface and the flaps in contact and so facilitating their union. It is also to a great extent the cause of the hernia cerebri which pushes through any opening in the skull and scalp. Hence the wisdom, in most cases, of removing the drainage tube at the end of twenty-four hours, and of the earliest possible entire healing of the wound. The treatment of the hernia cerebri by absolute non-interference and not by shaving it off, is that which is now, I believe, generally deemed best by surgeons, and certainly resulted very happily in my case. The skin-grafting upon its granulating surface succeeded even better than it generally does upon other parts of the body.

The hernia was dressed with dry sublimate gauze (1 : 1000) for about ten weeks, yet no ill effects resulted. The first serious rise of temperature could not be attributed to the mercurial, for the wound up to that

time was a mere linear one and had nearly healed. I greatly regretted that I re-opened the wound, thus allowing the hernia to follow and causing such long delay in the healing. Looking back upon the entire history, it is evident that the fetid diarrhoea was the cause of the high temperature and was itself, probably, the result of the prior obstinate constipation. It seemed more probable and reasonable, however, at the time to attribute the diarrhoea, the bulging of the flap, the aphasia and the progressive hemiplegia to intracranial pressure; and concealed supuration was the most likely cause for such pressure. But when he had several later attacks of fever with diarrhoea or constipation, the aphasia and paralysis again fluctuated in a curious and instructive way, more with the general condition, and especially with the fever, than with any possible alteration in the intracranial conditions.

A careful study of the surface temperature of the head was made, as is seen by the notes. The only inferences seem to be that, before the operation, the left side had about the normal greater heat than the right; but it is a rather curious fact that while this was true even of the brow, the right cornea was 0.6° F. hotter than the left. Three months after the operation, too, it is noticeable that the right side of the head was 0.7° F. hotter than the left—a rather curious fact, though Broca gives the right parietal temperature as 1.35° F. higher than the left. The other comparative temperatures are placed at the end of the history.

Dr. Heisler made daily examinations of the urine for some weeks, but, except that it became scanty and high colored during the febrile attacks, there were no other changes.

He also made very numerous examinations of the patellar, abdominal and cremasteric reflexes. Two days after the operation they were all normal but the knee-jerk was not reinforcible. The later observations vary extremely and seem to follow no law. Sometimes the right side was greater than the left, sometimes it was reversed, and in different reflexes it was not always the same side that preponderated at the same time. Sometimes one reflex would be normal or increased, while another would be diminished; sometimes all would vary similarly. There was apparently no relation between the variations of the reflexes and the fever or other physical factor. Before the operation the left knee-jerk was normal; right subnormal. Six days after it, the left was exaggerated, the right much diminished; while in the elbow-jerk the reverse was then found. We had no instrument by which to measure the knee-jerk, and I do not rely, therefore, implicitly on these observations, except that they certainly show a curious variability, seemingly without any law. In its histological structure the tumor is very rare. Only 3 fibromata appear in the 580 intracranial tumors tabulated by Bernhardt and Hale White. It is equally gratifying in the entirely favorable prognosis.

CASE II. *Simple depressed fracture of skull, followed in four months by epilepsy; thirteen months later trephining and removal of damaged brain tissue; recovery in seven days; cure of epilepsy to date.*—D. B. L., of Kansas City, was sent to me April 8, 1888, by Dr. W. C. Roller, of Hollidaysburg. Aged twenty-five; best weight one hundred and fifty-four pounds, present weight one hundred and fifty-two and a half pounds; five feet eleven inches in height; American; civil engineer. Had the ordinary diseases of childhood, except scarlet fever, from all of which he recovered perfectly.

At seventeen, in the summer, while in the engineer corps of a railroad, walking fast to catch a train, he felt dizzy and his head commenced to pain him. He was in bed for a week and in the house for ten days. The headache was not well located. So far as he remembers his headaches were of equal severity both before and after this, occurring from one or two in a month to one in two months. He always could predict them by a twitching of the eyes and by waves as of heated air passing before either the right or left eye. From seventeen to twenty-two he was in school, and since 1885 has been a civil engineer, in the office in winter and in the field in summer.

In November, 1886, he fell one night a distance of nine feet. His face was scratched and he had a serious blow on the right side of the head, without, however, any lesion of the scalp. He was unconscious for a considerable time. When he came to, about daylight, he found himself in bed and entirely conscious. After dressing he came down stairs and took a car to his sister's, where he was confined to bed for three or four days. A week after the accident when he first tried to dress himself again, he noticed that the three left ulnar fingers had lost their feeling. He could move them but they felt strangely unnatural; especially toward the tips. He had some difficulty in buttoning his collar and in other such finger actions. There was no other paralysis, and no catheter was necessary.

The headaches after the accident were about as usual, possibly less severe. He returned to business in about a month.

March 8, 1887. At 9 A.M., while waiting for a street car, he suddenly felt dizzy; starting to walk he swayed to and fro; called a policeman, but before one reached him he fell down unconscious. He recovered in a few minutes, and found that his left hand and forearm were paralyzed. After the policeman had rubbed his hand and arm for a few minutes, he completely recovered the use of them. He is quite sure that his shoulder and elbow were not affected. Though he felt able to go to work he did not resume his place at the office until the following day.

In June, 1887, he had a dizzy spell, which was relieved by the application of hot water to the head.

In September, 1887, being unusually well after his summer holiday, he suddenly felt quite dizzy. Fearing an attack he ran the length of a long hall back to his office, and lay down on the floor and became unconscious. He woke up muddled after ten or fifteen minutes. A brother clerk states that "his eyes were first open and fixed, then his head was tossed from side to side, with considerable general convulsive movement, and later considerable rigidity of the body. He turned his body like a corkscrew, and especially kept his head down pounding on the floor with his forehead. His face and hands were dark blue, cold and damp. There was frothing at the mouth, and later some loss of

memory for some little time." The hands were not affected in any way, but both eyes were as "red as flannel" for three or four days. In an hour or two he returned to his work in the office. These attacks were always ushered in by palpitation of the heart and a rushing sound in the ears. After these attacks, of his own accord, he took bromide (about a drachm a day) until the 25th of February, when he stopped on account of the acne.

March 1, 1888. While walking in the street he felt a dizzy attack coming on. He walked perhaps seventy-five feet and became unconscious. After he recovered he walked home and remained in the house for some days, but not in bed. He was nervous, but otherwise well. His hand was not affected. He was generally constipated before these attacks.

21st. He knew that an attack was coming on by the dizzy feeling and the sensation of numbness which he could not locate; by gasping for breath and by wanting more light in the room. He became unconscious, but did not fall from his chair. The hand was not affected after it. His sister, who was present, states "that his convulsion began with slight movement from side to side, increasing in violence; the face was swollen; the eyes open wide and very red; twitching of the head and face; left forearm and leg stiffened; no convulsive movement, except a little twitching of the left fingers; breathing was snoring and there was frothing at the mouth. He was unconscious for ten minutes. This attack was followed by temporary loss of memory, confused talking, etc." Later on, in the same day, another attack was aborted by the use of cold water on his head, which was very hot.

April 8. Present condition: Urine normal; no albumen, no sugar.

Head.—When his head was shaved two small scars were found, one unaccounted for and one from an old hurt. In addition to this, five-eighths of an inch behind the apex of the right parietal protuberance and on a level with it was a shallow groove running upward and forward at an angle of 50 degrees with the median line, the angle opening posteriorly. The groove was about two and a half inches long and one-half of an inch in width. The ends were not definitely marked; the centre was three inches to the right of the middle line. The anterior end of the groove died out just in front of the bi-auricular line and just anterior to the fissure of Rolando.

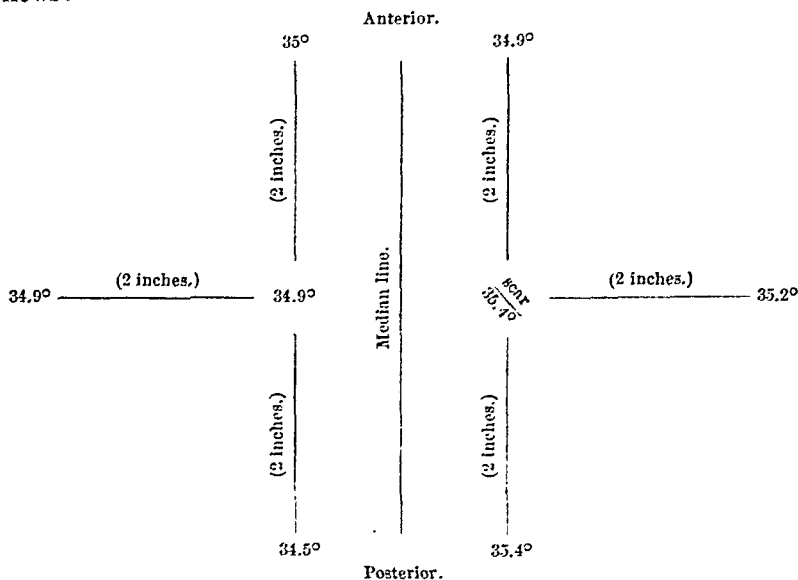
The anterior portion of the groove slightly overlaps the pre-Rolandic convolution, crosses all of the post-Rolandic convolution, and the posterior portion of it is over the supra-marginal. The scalp showed no lesion.

Dr. J. M. Taylor determined the following facts: "Knee-jerk and reinforcement normal. Dynamometer: right, 160°; left, 150°. Sensation in hands by the æsthesiometer, normal and equal. Station, sway one-half of an inch posteriorly, and then three-quarters of an inch forward; to right one-half of an inch; then left one inch. Electric reaction by a faradic current, normal."

Dr. Charles A. Oliver examined the eyes and made the following observations: "Direct vision for form, normal in each eye separately. Range and power of accommodation in each eye, proper for refractive error and age of patient. Fields of vision for form and color, normal in area and sequence. No evidence of subnormal color-perception. Pupils equal in size and shape upon separate and conjoined examination. Irides freely mobile to light-stimulus, accommodation and convergence.

Iris of right eye not so responsive as its fellow to light-stimulus in *monocular* action; there being a difference of one and a half millimetres in the size of the two pupils after the utmost action in myosis. No changes in the eye-grounds except those found in used hypermetropic eyes at patient's time of life. No perceptible anisometropia. Slight and almost imperceptible insufficiency of the interni."

The temperatures were also taken by Dr. Taylor over the scar and two inches in front, behind and externally, and at the three corresponding points on the left side, with a centigrade surface thermometer as follows:



Diagnosis.—Traumatic epilepsy from depressed fracture of the skull, with probably a fragment of bone broken from the inner table; possibly a cyst of the brain; certainly, secondary traumatic changes. Centre for the left hand and the supramarginal gyrus involved.

I recommended that an operation should be done, and he gladly consented to it.

Operation, April 12, 1888.—Present: Drs. W. J. Taylor, Mills, Sinkler, Lloyd, J. W. White and Morris J. Lewis, of Phila., C. M. Ellis, of Elkton, Md., and Mr. Le Conte, medical student.

I had intended giving the patient a quarter of a grain of morphia to contract the cerebral vessels, as Horsley has advised, but he informed me of the bad effects of that drug upon him, so I substituted one drachm of the fluid extract of ergot half an hour before the operation.

The previous day his head had been shaved and treated as described in Case I. Similar precautions were taken as to hands, instruments, sponges, etc. No spray was used.

Ether was administered and a horseshoe-shaped incision, three by three and one-quarter inches, was made, extending beyond the limits of the depression, with the convexity backward. Hemorrhage from this wound was admirably controlled by the flat band furnished with the ordinary Esmarch bandage. Eventually only three arteries in the scalp

required ligation. The loss of blood from the scalp wound was not over half an ounce. As soon as the flap was raised a sharp furrow, about three-sixteenths of an inch in depth, was seen in the skull, showing evidently the old line of fracture through the entire thickness of the bone. This could not well be appreciated through the thick scalp. An inch and a half trephine was now applied directly at the middle of the depression.

FIG. 8.

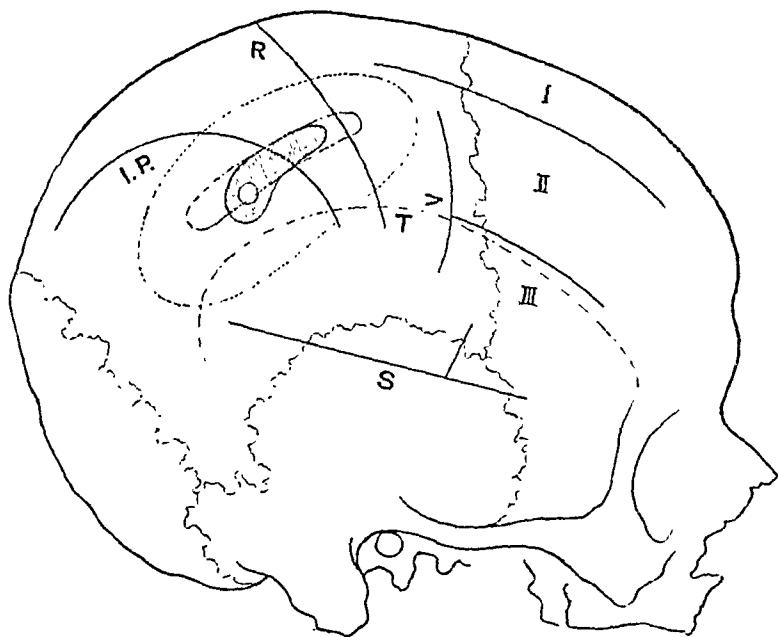


Diagram of skull.

S, Fissure of Sylvius. R, Fissure of Rolando. IP, Intraparietal sulcus. V, Vertical or precentral sulcus. T, Temporal ridge. I, II, III, The first, second, and third frontal convolutions. The dotted line represents the opening in the skull; the interrupted oral line, the furrow in the skull. The shaded portion represents the part excised; the circle representing the cyst. (Drawn by Dr. John M Taylor.)

Care was taken, on account of the inequality of the surface of the bone, not to cut through the elevated portions in advance of the depression of the furrow. As soon as the disk of bone was removed it was placed in a teacup, in a bichloride solution, 1 : 2000, which Dr. Lloyd was careful to keep at 105° F., by hot water in an outer basin. All the later fragments removed were put in this cup for future use, should it not be needful to remove the dura mater. The inner surface of the button showed a ridge corresponding to the old fracture. There was no bulging of the cranial contents, and they pulsated regularly. The dura mater in a line corresponding to the fracture was dark and thickened, and looked as though a large vein or sinus was under it.

A small opening was made in the dura, and, by means of a probe, it was found to be distinctly adherent to the brain, underneath and beyond the limits of the opening. Accordingly, by a rongeur forceps, the opening in the bone was enlarged three-quarters of an inch backward, to a point somewhat beyond the line of the old depression and half an inch anteriorly, until, finally, it measured three and one-quarter inches an-

tero-posteriorly and one and one-half inches transversely, and exposed all the adherent portion of the dura. An incision was now made in the dura mater, with the convexity backward, one-eighth of an inch from the margin of the opening in the skull, and the whole dura mater was detached from the brain, until the non-adherent portion was reached, both posteriorly and anteriorly. This lifting tore the brain substance to which the dura was intimately attached. The portion of the brain underneath the line of the scar was brownish-yellow for nearly a finger's breadth, of normal consistence anteriorly, but at the posterior extremity was distinctly hard. In the centre of this indurated portion a small cyst was discovered about one-quarter of an inch in diameter. Its contents were apparently serum. Some little hemorrhage from the vessels of the brain occurred at this time, when I tried the effect of cocaine applied on a pledget of borated cotton. This solution was made with recently distilled water, the bottle and its cork having been disinfected by bichloride solution and then washed with distilled water. The effect of cocaine was certainly very happy. It contracted a number of blood-vessels that otherwise would have required ligation. Three vessels were ligated with Kocher catgut and no further serious trouble was experienced from hemorrhage. The walls of the vessels were not friable and bore the ligation well. Neither pressure nor hot water was required and the vessels that were not ligated were controlled by cocaine.

The brain substance was so matted together in the line of the scar that it was impossible to distinguish one convolution from another. All the brain substance which was altered in color, including the thickened walls of the cyst, was excised to about one-third of an inch in depth anteriorly and nearly two-thirds posteriorly. The entire amount of brain substance excised would be, perhaps, one teaspoonful. The incision was made vertically to the surface and but little hemorrhage accompanied the removal of the brain substance.

At the time of the excision of the brain tissue Dr. Morris J. Lewis observed the following phenomena, which were all corroborated. How many were due to the act of cutting I leave to the reader to decide: "Patient yawned twice contracting the face evenly (previous to yawn the creases in face were slightly more marked on *right* side). Opened eyes and rolled them slowly; slight external strabismus of both eyes; pupils moderately dilated and equal. No conjugate deviation.

"During the whole of the cutting there were no movements observed in the left arm or hand, but once or twice conscious movements were made with the right arm and both legs, the right leg moving the most strongly.

"A tonic contraction, lasting but a short time, was noticed in *left* leg (a similar contraction in thumb, in palm and flexion of wrist occurred in left arm during etherization and before operation).

"After the cutting, and while the patient was still under ether, the following condition of the reflexes in the legs was noticed:

"*Right* knee-jerk exaggerated; *left* knee-jerk about normal. *Right* ankle-jerk marked; *left* ankle-jerk very slight. A tendency to clonus (one or two throbs) was observed in right foot, none in left."

I had taken my camera and two Cramer plates, No. 28, and at this stage of the proceedings Dr. Morris J. Lewis, at my request, took two photographs of the wound, the exposure in each one being ten seconds. This was the only interruption in the operative proceedings. The day

was cloudy and the light poor and the patient moved slightly, so that the first photograph was worthless, but the second is fairly good.

I then removed the already nearly detached dura mater corresponding to the entire length of the scar. On its inner surface a small spicule of bone, size one-quarter inch, was discovered. It was attached to the under surface by one end. It was imbedded in the brain substance, but whether it had any relation to the cyst could not now be ascertained, though it most probably had. The button of bone which had been removed was now completely perforated at its middle by the centre pin of the trephine and another hole was made toward its margin. It was then placed on the under surface of the flap and secured in place by a chromic acid catgut ligature, the two ends being passed through the openings in the bone and then through the scalp and tied on the outside to prevent its falling upon the brain substance, and to secure its adhesion to the scalp.

The scalp wound was now united by chromic catgut ligatures placed quite closely together. A rubber drainage tube was brought out of the posterior part of the wound and about a dozen strands of horsehair were passed entirely through the wound. An ample bichloride dressing was now applied to the entire skull.

Twice during the operation his respiration and circulation had been poor and a number of injections of brandy were made in the forearm. He was placed in bed surrounded by hot bottles. The operation lasted one and a half hours and his temperature, at the close of it, was 97° and the pulse 102.

April 12, 6 P. M. As the dressing was saturated with blood the wound was redressed. The left hand was distinctly paralyzed, as follows: The fingers and wrist cannot be flexed. Any attempt at flexion results in extension of both fingers and wrist and separation of the fingers. 9 P. M. Temperature 98.4° F., pulse 98. Had a very comfortable sleep; suffering no pain; vomited only once.

13th, 8.15 A. M. (first day after operation). Temperature 99° F. He passed a quiet night on the whole. Being hungry, I ordered him to have coffee and rolls for breakfast and milk every two hours. At 11.55 last night the nurse tested his hand and found no power of flexion. At midnight he repeated the experiment voluntarily and found flexion in both wrist and fingers. I examined him, however, and found this flexion is effected by the superficial and deep flexors only, which flex the last two phalanges, but the knuckle-joints, which are flexed by the interossei, cannot be flexed. He makes a fist by flexing the last two phalanges and rolling the flexed fingers into the palm (as in ulnar palsy). He can, however, touch his fingers with his thumb. When he desires to clench the fist tightly he flexes the fingers as described, and then the flexors are put further on the stretch by extending the wrist. As the dressing was saturated with bloody serum and a little blood, it was changed.

18th, 6 P. M. Temperature 99.8° F., pulse 88. The rise in his temperature was probably accounted for by some worryment due to his mother's absence, who was a stranger in the city. He has only two complaints to make, one that his right arm is very sore from the brandy injected during the operation, and the other that he is hungry. I directed a more liberal allowance of milk to be given to him with some bread and butter or toast. The dressing was a little moist, just saturated on the

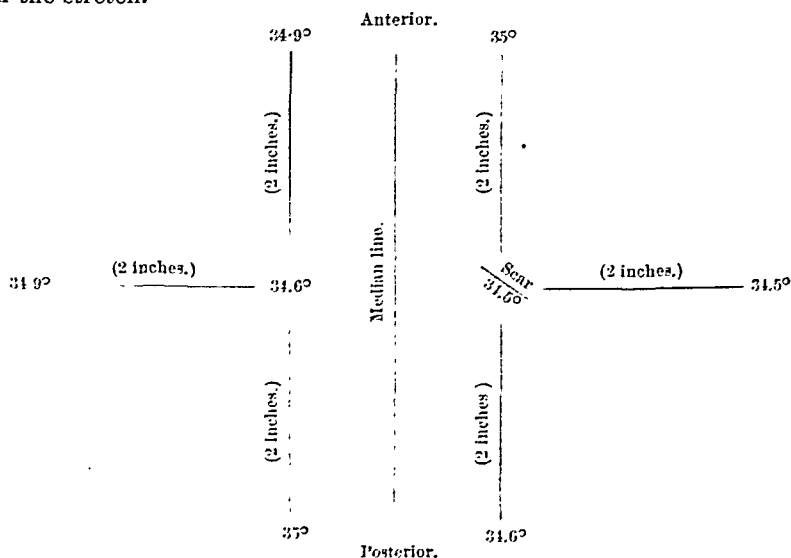
outside with bloody serum only, and was changed. The wound could not look better. The drainage tube was removed leaving the horsehair *in situ*. There was no material bulging of the flap.

14th 8 A. M. (second day). Temperature 98.4° F., pulse 86. 6 P. M. Temperature 98.4° F., perfectly comfortable; has had no pain; feels only a little sore; the right arm more comfortable; knee-jerk about normal, both yesterday and to-day, on the left side; slightly exaggerated on the right; no ankle clonus. By the æsthesiometer on the right fore and little fingers two points were appreciated as one at one-sixteenth of an inch; on the similar fingers on the left side at six-sixteenths of an inch.

15th (third day). Had a comfortable night; temperature normal. As he was hungry I allowed him to take two chops this morning. The only complaint was that it was not enough. During a dream in the night he disarranged the dressing (though the wound was not uncovered), so that I redressed the wound. I removed the horsehairs one by one. There was no discharge and the wound was completely healed, excepting a very small area at the drainage opening. The temperature at noon, by a surface thermometer for five minutes was, in the left hand, 35.4° (C.); right hand, 35.5° ; left forehead, 36.7° ; right forehead, 36° ; left leg, 35° ; right leg, 34.9° . (Dr. Wm. J. Taylor.)

19th (seventh day). The wound was dressed and all the sutures removed. As the suture holding the disk of bone in place was causing no irritation, it was left. The wound was perfectly healed, not reddened, no soreness. The flap is concave to just about the same extent that it was before the operation.

On the 17th (five days after the operation) he was up and dressed. To-day he has taken a walk of one-third of a mile. The only difficulty I have is in restraining him from reading, writing and, in general, too great physical and mental exercise. He is on an ordinary diet. In his left hand he has regained sufficient power to make his grip painful to me. When he wishes to grasp with any force, however, he still increases the power of the flexors by extension of the wrist, thus putting the flexors on the stretch.



23d (eleventh day). The suture holding the disk of bone in place was removed. No irritation at its two openings of exit through the scalp.

24th. Photograph taken. His mother being ill, he goes home tomorrow. Dr. W. J. Taylor made the following observations on his temperature (Centigrade).

Dr. J. M. Taylor made the following report:

"Dynamometer: right 160°, left 90°.

"Motion. Left index finger closes indifferently well.

"Sensation. Slight impairment in middle forearm and third and fourth fingers, but position of æsthesiometer clearly indicated.

"Knee-jerk: right increased, left normal; reinforcements to normal.

"Station, normal, antero-sinistral; antero-posteriorly, forward three-quarters of an inch and not backward; laterally, right half an inch, left one and a half inches.

"Muscles respond to the mildest faradic currents equally well on both sides. An accident made it impossible to test them for reactions of degeneration."

May 23. The patient called at my office to-day. The site of the operation shows a furrow. The replaced button of bone is perceptible and firmly adherent to the scalp. It is not adherent on the sides of the opening. This is well shown when he bends forward, as the button can be moved by pressure. The scalp is in good condition and protects the opening well. He has no headaches or mental symptoms, except that now and then he fears an epileptic attack, and this worries him. He eats and sleeps well. He makes a fist firmly, with primary flexion of the knuckles; his grip is good, and he has lost entirely the "dead-like" feeling in the three ulnar fingers. When he raises his left hand, and especially if he grips something with it, the left forefinger twitches noticeably.

Dr. Oliver reports the following reëxamination of the eye, twenty-four hours after operation.

"Iris of right eye responds *separately*, as equally and as freely as its fellow, the pupil becoming the same size as that of the left side upon extreme contraction, to light stimulus.

"The isolated symptom of want of proper reaction of the right iris to light stimulus alone (a species of monocular Argyll-Robertson pupil), which was relieved by the operation, consisting in the excision of a portion of the cortex and subcortical tissue in the right supra-marginal convolution, is, as far as the observer is aware, a new observation, and may be of value in further determining and better localizing the situation of interruptions in the light reflex act." In Dr. Oliver's paper later details will be given of the ocular conditions.

Dr. George Dock kindly examined the brain tissue removed, and reports as follows:

"The specimens consist of a piece of dura mater of irregular outline, measuring 4 cm. in length and 2.5 cm. in width, and a part of cortex cerebri of similar outline, down to, and including the white matter.

"The dura is divided into two unequal parts by a curved line in the long axis. This line is marked by loose connective tissue on the outer surface, resembling the course of a meningeal vessel. Near one end a small, smooth spicule of bone is adherent to the membrane. On the inner surface the line is well marked, though only as a thickening and pigmentation of the membrane. The dura varies in thickness

from 5 mm. to 2 mm. It is deeply pigmented, especially on its inner surface. Microscopic examination shows fibroid thickening, especially on the inner surface, corresponding to the line supposed to represent a cicatrix. There is also extensive perivascular and interstitial hemorrhage, and hemorrhage into the arachnoid spaces.

"The piece of brain substance measures 3.3 cm. in length, 2 cm. in width and 1.3 cm. in greatest thickness. The surface is rough and discolored, and shows no normal cortical surface. The edges and inner surface show a few punctate spots, but appear healthy. The small cavity on the surface looks like the site of a cyst, which has been obliterated by the hardening.

"Microscopic examination of specimens from various parts of the surface show extensive destruction of brain tissue. The brownish tags on the surface are composed of broken-down nervous tissue with pigment masses and compound granule cells. Deeper down are perivascular hemorrhages and collections of lymphoid cells, fine granular pigment, compound granule cells and increased number of neuroglia cells. The edges and inner or white matter surface show usually no change. Only at one end are there hemorrhages and collections of small cells in the perivascular spaces, at the margin of gray and white matter. A section from the wall of the cavity mentioned shows no traces of cyst wall proper. The gray matter there shows also vascular dilatation, compound granule cells and slight degeneration of nervous tissue.

"*Diagnosis.* The specimens evidently show results of a chronic meningo-encephalitis, which, in the absence of any discoverable vascular disease, is most probably of traumatic origin. The scar-like alteration of the dura strengthens this opinion, as does also the spicule of bone."

REMARKS.—It was clear from the outset that this patient had suffered from a simple depressed fracture of the skull, and the operation showed that the dura had been torn and a spicule of bone driven through this rent into the brain. The brain substance also had been lacerated, and later a cyst had been formed. The degenerative changes in the brain were very evident to the eye, and the hardening of the cyst walls equally so to the finger. The conclusion is clear. This patient should have been trephined *immediately after the accident*, especially as, with due antiseptic precautions, trephining is not now a dangerous operation. In fact, the patient was lucky to have escaped an acute meningo-encephalitis. Whether the surgeon recognized the fracture or not, I do not know, but the patient, a very quick, bright and intelligent fellow, made one curious observation upon himself that I commend to the profession as it may prove a useful means of diagnosis in other cases. On the morning after the accident he examined the two sides of his head by tapping on it, and he says he observed distinctly a "cracked-pot sound" on the side of the injury. Whether this would be perceptible only subjectively by the patient, or whether the surgeon himself could also perceive it, is a question I have not yet had an opportunity to settle. If not heard by the unassisted ear of the surgeon, I would suggest that

a stethoscope be used while the head is tapped. "Skull percussion" may hereafter render important aid, especially in fissured fractures.

The location of the injury was clearly mapped out as over the hand-centre in the post-Rolandic convolution and over the supra-marginal convolution. The early clinical history indicated the involvement of the hand-centre, and the results of the operation were strikingly confirmatory. The very early return of the hand movements was probably due to the fact that "compensation" had already been effected soon after his accident, and that spoiled, and not normal brain tissue, was removed. The injury of the supra-marginal convolution and subsequent removal of the degenerated tissue would seem to have some causal connection with the "monocular Argyll-Robertson pupil" symptom, noted by Dr. Oliver, and may prove of value in the future.

Normally the left side of the head shows a somewhat higher surface temperature than the right. It is interesting to note that in this case the injured (right) side before the operation was distinctly the hotter of the two, and that only twelve days after the operation its temperature fell about 1° C., a point below the temperature of the left side—*i. e.*, its normal relation. It would seem that not only was there no inflammatory heat left as a remnant of the operation, but that the removal of the injured tissue had cut off the source of irritation and resulting heat.

Along with this it is to be noted that there has been no return at present (August 12th) of any fit. Though this period of immunity (four months) is too short to warrant any definite statement of results, yet, if we observe that before the operation the fits, though infrequent, were growing more frequent as time went on; that the fits have not since returned; and that the surface temperature of the right side has fallen to its normal relation to that of the left, it would give reasonable hope that the removal of pressure and of the diseased tissue, in which irritative changes were undoubtedly progressing, will result in a permanent cure.

ROTATION OF OVARIAN TUMORS;

ITS ETIOLOGY, PATHOLOGY, DIAGNOSIS AND TREATMENT.

By J. KNOWSLEY THORNTON, M.B., C.M.,

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NEW HOSPITALS FOR WOMEN.

THE twisting of the ovarian pedicle, from axial rotation of the tumor, is of great interest to the pathologist, both as to its etiology and its results; and it is a sufficiently common accident to make it of even greater interest to the physician or general practitioner who is called upon to

differentiate its symptoms from those of other peritoneal diseases, and to relieve the great pain to which it commonly gives rise. It is, however, to the practical surgeon that all three must turn for their knowledge of the subject, and for the cure of the patients. My attention was early directed to the condition by a very unfortunate case, which I have recorded at length in the *Transactions of the Pathological Society of London*, and in a paper published in the *Medical Times and Gazette* more than ten years ago. The completion of six hundred cases of ovariectomy, among which I have met with no less than fifty-seven cases of twisted pedicle, seems to afford a fitting opportunity for giving to the profession the facts observed.

Rokitansky first drew attention to this subject by a very valuable paper on "Strangulation of Ovarian Tumors by Rotation," published in 1865. He described thirteen cases, eight of them met with in the *post-mortem* examinations made in fifty-eight cases of ovarian disease—a highly suggestive percentage, with regard to the mortality of the complication, when allowed to run its natural course. He had previously called attention to the subject as early as 1841, in the first volume of his *Handbook of Pathological Anatomy*. Sir Spencer Wells, in his second book on *Diseases of the Ovaries*, refers to Rokitansky's papers and gives some valuable records of his own experience, and in his more recent work on *Ovarian and Uterine Tumors*, page 60, he mentions two cases in which death took place before operation. He thus describes the results of rotation: "Congestion, exudation of serum, extravasation of blood and rupture follow in rapid succession," and again: "If the rotations are so complete and enduring as to strangulate the arteries, gangrene is inevitable." I shall have to refer to these passages again in my concluding remarks. He also points to the danger of intestinal obstruction as one of the possible results of twisted pedicle, and records a case of the removal of a dermoid tumor with twisted pedicle, during pregnancy, with a successful result. This tumor had been carried by the patient for eighteen years, and through several pregnancies, and was found at the operation, as in some of my cases to be hereafter recorded, entirely separated from its pedicle.

Kolb has recorded a case in which a fibroid tumor of the ovary, with twisted pedicle, caused obstruction of the intestines.

Peaslee, in his work on *Ovarian Tumors*, mentions cases in the practice of Van Buren and James Crane; Van Buren's cases were both fibroid tumors of the ovaries, and in one he operated with success. Crane's is a very typical case, the woman being seized with "agony of pain in the left iliac region" twenty-four hours after labor, and dying on the fifth day.

Patruban, so far back as 1855, recorded a case of rapidly fatal intracystic hemorrhage from rotation of an ovarian tumor.

Wiltshire has the honor of being the first operator who successfully removed a strangulated ovarian tumor in the acute stage of the accident; the symptoms came on four days before the operation, the twist was from right to left and the tumor of the right ovary. The patient recovered. Edwards, of Malta, published a case in *The Lancet* in 1861. The patient was known to have had a tumor during her first gestation. On the second day after her second labor, she was suddenly seized with violent pain, and died on the fourth day. At the autopsy, a tumor of the right side was found, with twisted pedicle; it was of a livid purple color, and there were patches of extravasated blood in its walls, which had given way; there was no peritonitis, and there were no adhesions.

Barnes records a case in the *St. Thomas's Hospital Reports*, 1870. The patient was prematurely confined, and died nine days later. At the autopsy, a dark-colored cyst was found, with a double axial rotation from right to left. He mentions a second case, in which the symptoms were mistaken for those of labor. Both were tumors of the right side.

Malins published a case in *The Lancet* for April, 1877; the twist was from within toward the left and over to the right, and had followed tapping. The tumor was presumably of the right ovary, but it is not distinctly stated so.

My own paper on "Three Cases Illustrating some of the Various Results of Rotation of Ovarian Tumors" was published in *The Medical Times and Gazette* of July 28, 1877. The three cases there detailed are the first three in the table which accompanies this paper. I then suggested "that the peristaltic action of the 'intestines may start the process,' and that the twist, once started, the pulsations through the cord thus formed 'would tend to increase it.'" I also said: "If the case is complicated with pregnancy, the foetal movements may play 'an important part.'" We shall see how far the facts brought out by an examination of the numerous cases in my tables support my suggestions and those of others to which I am about to refer.

Veit, in 1878, mentions that Schröder had at that time met with thirteen cases of twisted pedicle, in ninety-four ovariectomies, a result very closely corresponding with my own experience, as will be seen by noting the numbers in the third, fourth and fifth hundreds, though the proportion in the first, second and sixth is much smaller.

Tait read a paper on the subject before the Obstetrical Society of London, in 1880, also founded on three cases, and an interesting discussion followed. He advanced the theory that the solid wedge of feces passing down the rectum was the cause of the rotation; but to support his theory, the tumors must all be on the right side, and my table shows that this is by no means the case. I think it is quite possible, however, that this may be one of the causes of rotation, and we shall see that an

observation made by Doran, when making a *post-mortem* in a case of my own which died from cancer of the rectum, while in the Samaritan Hospital with ovarian tumor, rather supports Tait's theory.

In the fourth edition of his work on *Diseases of the Ovaries*, Tait further discusses the subject at some length, and mentions that he had then operated upon nine cases with this complication. His attention was, like my own, originally called to the subject by an unfortunate case in which he operated for hernia; the patient died four or five days afterward, from gangrene of an ovarian cyst with twisted pedicle, and the autopsy made him doubt whether the symptoms all along had not been due to the ovarian trouble, rather than to the hernia.

Doran, in his work on *Tumors of the Ovary*, etc., devotes a whole chapter to "Twisting of the Pedicle." He thus describes the case already referred to: "a little artificial distention of the intestine caused it to press against the tumor so as to push its left side backward, stretching and twisting the pedicle." There was no twist in this pedicle, but he found vessels in it blocked with old clot, and it seems probable that the loading of the rectum caused by the cancerous stricture may have from time to time caused enough twist to set up clotting and changes in the vessels. He remarks: "Still I believe that, as a rule, the twisting of a pedicle is to be explained by the simpler doctrine that the tumor, pressed upon by the viscera and even the costal cartilages above, and by the pelvic structures below, but comparatively free laterally and anteriorly, rotates on its own axis every time that the patient, after walking or lying on her back, 'turns round and rests on her side.'" He sums up the results thus: "This complication may cause 'rupture or sloughing of the tumor, arrest of growth of the tumor through obstruction to the vessels of the pedicle, absolute atrophy of the tumor,' and, lastly, detachment of the tumor from the pedicle, and subsequent nourishment of its tissues through vascular adhesions." He figures a very interesting case of my own of complete detachment, Case 232, and on the next page gives another figure which exactly represents the condition I noted in Case 384, though it was not drawn from my specimen. Mr. Doran has kindly allowed me to reproduce these drawings.

Having thus briefly glanced at the literature of the subject, I will now proceed to a critical examination of the cases in my own tables, to see what actual facts they give us, and what probable explanations or more doubtful points they suggest.

The first fact is: that rotation is most common during the period of menstrual activity, two of the youngest patients being nineteen, and the majority between twenty and forty-five; it is, however, not by any means confined to this period, for no less than nine of my patients had reached or passed the age of fifty, and one was only thirteen and had never menstruated. A careful examination of my note-books also estab-

lishes the fact that the regularity and the amount of the catamenia are not usually affected, though there are a few marked exceptions, in which amenorrhœa or menorrhagia seems to have been induced. This rather surprises me, as I should have expected, especially in the chronic cases, that the irritation of the ovarian nerves would have made menorrhagia the rule, and I imagine that the loss of blood into the cyst must, by its compensatory action, prevent this in the majority of the cases.

It is natural to pass from the effect upon menstruation, to that brought about by the natural amenorrhœa of pregnancy. I have operated during pregnancy six times, and five of these cases had twisted pedicles; this shows a very close relation between the two conditions; and when we examine the column in the tables headed history, we find in it no fewer than nine other cases (or fourteen in all), in which the acute symptoms were associated with pregnancy or delivery, beginning commonly shortly after the latter, or after a miscarriage.

There are also four other cases in which the attack was associated with menstruation, or with its check by exposure to cold. Thus in eighteen cases out of fifty-seven, the circulatory phenomena associated with menstruation and pregnancy seem to be the active agents in producing the acute attacks. When we remember how very difficult it is to extract any facts from some patients, and how especially difficult it is to make them remember even the common time of their periods, much more to make them associate any special occurrence with the presence of menstruation, we may reasonably suppose that in many of the other cases the attack came during or in some connection with the period.

Accidents, direct violence, sudden strain and sudden change of position are the determining causes of the attack in eight cases; thus, we have walking downstairs, catching at a falling box, constant and violent coughing, sea-sickness, the administration of an enema, sponge tenting, falling over a hedge and straining at stool during severe constipation. Then, as in my first case, the tapping of the cyst seems to have precipitated the catastrophe in two other cases, and in two more it is a possible agent, though the history is imperfect.

There are only eight cases in which the patients did not have, or did not remember, a sudden attack of pain and more or less severe illness after it.

With regard to the influence of pregnancy, it is worthy of note that thirty-six of the fifty-seven patients were married women, a number out of proportion to that of the married and single cases in the whole six hundred ovariectomies.

It is obvious that the side on which the tumor grows has nothing to do with rotation, for there are in my tables twenty-eight cases of tumors of the right ovary and twenty-eight cases of tumors of the left ovary, and one in which both were involved.

No.	Age	Condi- tion.	Side.	Condition of cyst or its contents.	Condition of pedicle	Adhesions.	History.	Result.	Number in ovariotomy Table.
1	28	Married	Right	<i>Vide</i> Trans. Path. Soc. 1876, vol. xxvii, p. 212.	.....	None.	Severe pain before birth of last child twenty-one months back; pregnant four and a half months; slow growth; tapped; acute inflammation of cyst and strangulation.	Died in fifteen hours	5
2	19	Single	Left	Full of blood.	Partial twist.	Extensive adhesions.	No nento symptoms. Has had five children since mar-riage.	Recovered.	16
3	21	Single	Right	Full of dark blood.	Completely obstructed.	Hardly any.	Excessive pain at the periods. Rapid growth, then slow	Recovered.	21
4	19	Single	Both	Suppurating.	Both completely ob-structed.	Universal.	No useful history. Had been tapped.	Died.	26
5	30	Single	Right	Almost solid old clot.	Vessels quite blocked with old clot.	Universal.	Attack of pain, fever, in May, 1877; three months later I diagnosed ovarian cyst; three months later it was so solid I doubted.	Recovered.	48
6	31	Married	Left	Coffee-ground material.	Vessels quite blocked with old clot.	Universal.	Sudden attack of pain, with constant vomiting, six months before operation. Anemia followed, and cyst did not enlarge.	Recovered.	101
7	53	Married	Right	Dermoid.	Twisted off	Blood supply from in-terstitial adhesions	No useful history. I removed at the same time an ordinary tumor of the left ovary with a long pedicle.	Recovered.	102
8	42	Single	Left	Much clot in cyst.	Two turns and a half, but not obstructed completely.	Parietal and omental.	Sudden attack of abdominal pain, fever, etc., three weeks before operation.	Recovered.	130
9	19	Single	Right	Nothing special.	Partial twist; long pedicle.	Large blood supply through omentum.	Much abdominal pain for first five months after dis-covey of tumor; it then ceased; growth slow.	Recovered.	132
10	31	Married	Left	Much pus and lymph.	Twisted cord, size of goose quill.	Universal.	Sudden attack of inflammation of the bowels four months after last confinement, three years ago; ill over since. Blood and matter on two occasions re-moved by tapping.	Recovered.	146
11	40	Single	Left	Wall friable, infiltra- ted with blood and full of clot.	Twist from left to right.	Universal recent lymph.	Sudden attack of "screwing pain" in left groin, three weeks before operation. While walking down stairs, faintness, cold perspiration, etc.	Recovered.	197
12	61	Married	Left	Dermoid ruptured and suppurating.	Hard cord.	Universal; peritoneum full of pus and con- tents of cyst.	Sudden attack of pain while stooping to catch a fall- ing box. Five weeks before operation, vomiting, etc.	Died at once; shock.	290
13	54	Married	Left	Nothing special	Thin and long.	Chiefly on right side to omentum and pa- rietes; firm and old	No useful history. Had been tapped once six months before operation; dark brown fluid.	Recovered.	216
14	33	Married	Left	Dermoid.	Twisted off.	False pedicle to omen- tum in right side of abdomen.	Was in the Samaritan Hospital with small tumor in left side, in May, 1874. Had children in that year, in 1876 and 1878, with no trouble with tumor; pregnant again in 1880, and in third month began to suffer from monthly attacks of pain, but got safely over her labor. Then with the return of the periods the pain became more severe, and she came into the hospital again, and I noted that the tumor had moved over to the right side of the abdomen.	Recovered.	232

15	31	Married	Right	Sarcomatous dermoid.	One turn and a half, but not obstructed.	No adhesions.	Rapid increase of size, with much pain, for four months. Dragging and burning in right side. Then the tumor gradually seemed to cease growing. Has had another child since the operation, and remains well.	Recovered.	242
16	23	Single	Right	Septic pus from tapping.	Like umbilical cord; not obstructed.	Extensive peritoneal and omental.	Five or six years ago used to have occasional pain in right side; increase of size was rapid a few months back, but lately has got rather smaller.	Recovered.	254
17	49	Married	Left	Showed that there had been repeated hemorrhage into cyst.	Long, and not obstructed.	Several little false pedicles to omentum.	Years attacks of pain after birth of last child, five years back. Has had five miscarriages, each being preceded by an attack of pain in left side.	Recovered.	265
18	44	Married	Left	Much fresh blood.	Obstructed by hard clot.	Universal; recent.	Attack of violent pain three weeks after trouble with constipation.	Recovered.	287
19	41	Married	Right	Much old clot.	Not obstructed; cord-like.	Very extensive and firm.	Attack of severe pain in right side four and a half years ago, after confinement. Nine weeks back, after miscarriage, a still more severe attack and several slighter attacks since.	Recovered.	288
20	27	Single	Right	Ruptured dermoid.	Too much surrounded by adhesions for accurate examination.	Universal and firm.	Violent pain, vomiting and diarrhoea from chill, checking period in December, 1881.	Recovered.	289
21	33	Single	Left	Black and full of clot; some pus.	Only partially twisted; broad ligament inflamed with blood.	General acute peritonitis; much blood free in peritoneum.	Taken suddenly ill on a Sunday. I saw her Wednesday late, and operated on Thursday morning. All signs of internal hemorrhage and peritonitis. Menstruation was just commencing when the attack began.	Died in forty-one hours.	291
22	43	Single	Right	Double dermoid.	Right pedicle twisted through.	Blood supply from adhesions to intestines, etc.	Troublesome cough in winter, 1878. Seemed to cause rapid increase of size. Tapped in 1879, and then began to have recurrent attacks of pain in right side.	Recovered.	297
23	50	Married	Left	Congestion and inflammation; changes due to twist.	Two turns; not obstructed.	No adhesions.	Steady decrease of size during the last six months. History imperfect.	Recovered.	329
24	13	Single	Right	Nothing special.	Thin and long, not obstructed.	Only omental.	No history of special troubles; had not menstruated. Two aunts and a cousin had also ovarian tumors.	Recovered.	332
25	33	Married	Right	Inflammatory changes.	One turn; short.	Extensive false membranes, with large supply vessels.	Inflammatory attack after last confinement, followed by constant colored discharge for four years, and then six months amenorrhoea.	Recovered.	342
26	19	Married	Left	Dermoid.	Left twisted through.	Chief blood supply from omentum and intestines and also from adhesion to opposite ovary and tube.	Craniotomy performed eight years back because the tumor obstructed labor; four years later caught cold and "dreadful pain" in the tumor.	Recovered.	345
27	21	Married	Right	Brown fluid; vessels blocked with clot.	Completely obstructed.	Peritoneal, omental and intestinal.	When two months pregnant, was seized with violent pains like labor-pains in the right side; was ill nine weeks; then discovered a tumor in right side. Living seven months girl born fifty hours after operation. Had had one child before illness.	Recovered.	344
28	27	Married	Left	Dark tar-like fluid and fresh clot.	Not obstructed; looked like umbilical cord; large blue veins.	Omental and intestinal.	When three months pregnant, had sudden attack of violent pain in left side, at time when period would have come on but for her condition. This was a month before admission. Had had three children before. Went full time after the operation.	Recovered.	346

No.	Age	Condi- tion.	Side.	Condition of cyst or its contents.	Condition of pedicle.	Adhesions.	History.	Result.	Number in ovariotomy Table.
29	43	Married	Right	Brown fluid, clot and pus; removed it entire.	Firmly twisted into cord.	Very extensive to parietes and omentum.	Pain after a miscarriage (she maintains in left side) was ill eleven weeks; then twelve weeks before admission second attack, also in left side. Was tapped, and then became so ill that she lost consciousness for a month.	Recovered.	347
30	53	Widow	Right	A mass of blood-clot.	Firmly twisted into cord.	Universal and recent.	A Swiss lady who had just crossed to this country, and on arrival was found to be seriously ill, though she would not admit it, and I could get no history. Heavy flooding for three weeks only symptom.	Recovered.	359
31	43	Married	Right	Edematous and full of bright red blood.	Only half turn.	No adhesions.		Recovered.	363
32	62	Single	Left	Dermoid.	Only half turn.	No adhesions.	Other ovary also sent of large tumor which was removed. Also a fibroid outgrowth of uterus; sudden seizure with violent pain and rapid increase of size during period while taking the baths at Duxton, followed by rapid increase in size of tumor.	Recovered.	377
33	33	Single	Right	Nothing special.	Twist two-thirds from right to left.	No adhesions.	Was seized with violent pain in the left side one night after an enema; a night or two later had a profuse discharge of greenish fluid from the bowel; continued to flow for twelve hours. Then she got smaller; and is now getting large again. I found at the operation the place where the fluid had escaped into the bowel.	Recovered.	380
34	36	Widow	Left	No record.	A more fibrous cord; twist from left to right.	The adhesions consisted of a series of vascular bands so close together as to form almost a complete envelope to the cyst.		Recovered.	384
1 Com- pare Fig. 3.						No adhesions	Inflammation of bowels five or six months back, with much pain in left side. Tumor seemed then to get more into right side of abdomen.	Recovered.	385
35	39	Married	Left	Purple and full of clot	One and a half turns from left to right.	No adhesions	No special history. Increase of size more rapid since birth of last baby.	Recovered.	390
36	44	Married	Right	Much old blood in it.	Twist from right to left.	Extensive parietal and omental	Was supposed to have had an ovarian tumor thirty-five years ago, which burst into peritoneum and disappeared. Present enlargement seems to have followed sponge tamponing.	Recovered.	391
37	53	Married	Right	Bloody fluid and clots.	Like an umbilical cord	Extensive parietal.	No history to fix time of either twist or rupture. Very active, and "always better when rushing about."	Recovered.	392
38	27	Single	Right	Ruptured cyst and chronic peritonitis.	Partly twisted; large veins; like umbilical cord	No adhesions.	Illness began with pregnancy; then miscarriage with rapid growth of tumor and much pain and loss of health. Sister also had ovarian tumor.	Recovered.	393
39	...	Married	Right	General inflammation of tumor; cysts full of blood.	Partly twisted, and very long.	Universal and firm.	Thirteen weeks back, attack of pain, diarrhoea, sickness, with much distention; then jaundice	Recovered.	394
40	47	Married	Right	Dark fluid and clots	Cord-like.	Extensive and of varying age; some quite recent.	Three months after second marriage, began to have pain low down in left side, and was twice quite laid up with it. Tumor has latterly grown smaller.	Recovered.	410
41	45	Married	Left	Full of soft papillomatous and blood.	Twist right to left.	General.	Attack of pain in right side three years ago, after falling over a hedge. Frequent attacks of pain since. Most severe one, lasting three weeks, five months ago.	Recovered.	408
42	28	Married	Right	Quite black and inflamed with clot	Completely obstructed.	Universal and recent.	Rapid enlargement, with pain in right side, after a fall, a month before operation.	Recovered.	409
43	36	Married	Right	Ruptured cyst, and subacute peritonitis. Much clot in cyst.	Not obstructed.	Extensive and recent.		Recovered.	

44	40	Single	Left	.....	Outer edge of pedicle was partly cut through by twist, and the rest very edematous; left to right. One and a half turns.	No adhesions.	Pain coming and going in left side for about a year.	Recovered.	478
45	59	Widow	Left	.....	General.		Sudden seizure with violent pain in abdomen, about nine months before the operation. There have been occasional recurrences.	Recovered.	472
46	43	Single	Right	.....	Parietal, omental and intestinal.		Burst into the bowel three and a half years before operation. I opened the bowel at this spot in separating tumor, and closed it by continuous suture. In early part of year, severe attack of pain in right iliac fossa; another still more severe in June; ill three weeks. Has been getting smaller ever since this last attack. Much free fluid in peritoneum. Patient had rapidly lost flesh, and became very anemic, though the tumor was small (5½ lbs.). There had been no special pain, and her age made me fear it might be a malignant growth.	Recovered.	473
47	58	Married	Left	Dark purple, full of blood and broken clot.	Like umbilical cord, but not obstructed.	No adhesions.	Pain in left ovarian region for a year; rapid swelling of abdomen four months before operation. At time of operation, had diarrhoea, and was passing large quantities of water, with rapid decrease of size. There was general and severe subacute peritonitis and papillary infection.	Recovered.	475
48	39	Single	Left	Ruptured and full of pink papillomata.	Small cord-like pedicle.	Chief blood supply from band to bowel.	Pain in left ovarian region for a year; rapid swelling of abdomen four months before operation. At time of operation, had diarrhoea, and was passing large quantities of water, with rapid decrease of size. There was general and severe subacute peritonitis and papillary infection.	Recovered.	477
49	39	Married	Left	Cyst, like liver; full of densely laminated clot.	Completely obstructed.	Universal; dermoid tumor of right ovary.	Violent pain in left side, vomiting, diarrhoea, etc., two and a half years ago, just after birth of child.	Recovered.	479
50	24	Single	Left	Ruptured cysto-sarcoma.	Small and slightly twisted.	Slight parietal.	Attack of abdominal pain with rapid increase of size, three months after discovery of tumor. Has never been able to lie on left side since. I aspirated right pleura before performing ovariectomy, and removed three and a half pints of fluid.	Recovered.	487
51	66	Married	Left	Ruptured, and chronic peritonitis.	Small and cord like.	Omental and extensive pelvic.	Pain two years back; increase of size only a year. No pain lately, but more rapid increase of size.	Recovered.	496
52	32	Married	Right	Nothing special.	Three-quarters turn.	No adhesions.	In fifth month of pregnancy; natural labor at term; girl. Just after she became pregnant, severe paroxysmal attacks of pain, which came and went for about a fortnight. No pain since.	Recovered.	497
53	57	Married	Left	Full of clot.	Firmly twisted.	Universal.	Pain and retching began five months ago, and she discovered a hard painful swelling in left groin.	Recovered.	512
54	60	Married	Left	Papillomata in cyst and on peritoneum.	Like a rope.	Omental.	Six months ago severe attack of pain in abdomen; after this got smaller for some time, but is now getting large again.	Recovered.	527
55	23	Married	Right	Nothing special.	Like umbilical cord.	Extensive adhesions; some to pregnant uterus.	Caught cold six weeks after her confinement, and had a severe attack of pain in right side; was in bed some days. Nearly two months pregnant at time of operation, and went on to term.	Recovered.	574
56	40	Married	Right	Much blood in cyst.	Partly twisted from right to left.	No adhesions.	Severe attack of pain in January; was ill for a fortnight; slight attacks afterward till March 3d, when she had another severe attack. Cyst has grown fast since January; she has grown very pale and thin.	Recovered.	590
57	22	Married	Left	Large patches of deep purple clot on lining membrane; bloody fluid.	Twice twisted from left to right.	Universal recent adhesions.	Sudden attack of pain in left side, five months ago. It returned at intervals for nearly four months.	Recovered.	592

Unfortunately, I have not paid sufficient attention to the direction of the twist to see if this would help at all in explaining how it is first started. I have only noted it in nine cases: three were right-side tumors, and in two the twist was from right to left, and in one from left to right; six were left-side tumors, and in five the twist was from left to right and in one from right to left. It would seem from this small number of observations that the tumor twists more readily inward and away from its own side, and this is, I think, borne out by the few observations recorded by other observers, and is what one would rather expect to be the case if one considers the position in which a small tumor hangs from the back of the broad ligament, and the relations of surrounding organs to it. I think it is not at all improbable that the amount of muscular tissue contained on the inner side of the pedicle may, by its contractions, tend to draw the tumor toward the middle, and thus aid a turn in this direction; possibly this may explain the acute symptoms so frequently following rapid diminution in the size of the uterus and its firm contraction, as after miscarriage or labor.

The arteries with their thick walls are chiefly on the inner side of the pedicle, and if this direction of twist be the common one, it may explain why so much twisting occurs in some pedicles without complete obstruction, the softer veins in the outer parts of the pedicle being less severely pressed upon than the more resistant arteries. I imagine that the complete obstruction of the pedicle depends greatly upon the thickness of the tissues in it, apart from its vessels—*i. e.*, upon the amount of padding round the vessels, a thin pedicle with hardly anything but vessels being much more liable to complete occlusion. Of course, the length of the pedicle and amount of play thus allowed to the tumor are also important factors, any drag upon the vessels after the twist has started being very likely to finish the obstruction; indeed, it is the extreme of this condition which cuts through the pedicle and causes those curious cases of transplanted tumor, some of which will be found in my tables, and to which I shall have again to refer.

Klob has suggested that the alternate filling and emptying of the bladder is the chief predisposing cause of rotation. If this be so, one would expect the tumors to rotate in the direction of the majority of my noted cases, the left side of a right tumor being pushed back and rolled toward its own side of the body each time the bladder fills; thus the habit of allowing the bladder to become greatly distended before emptying it would become a predisposing cause of rotation.

It is somewhat difficult to carry in one's mind exactly what is meant by twisting from right to left, or *vice versa*, and I have, therefore, given diagrammatically the direction of the lines made by the twist in a pedicle on the right side, when seen from above, as in an ordinary ovariectomy.

I am still inclined to regard my original suggestion, that it is the

peristaltic action of the intestines which starts the rotation, as the correct one. I recently punctured the intestine on the right side with a fine trocar, to give temporary relief to an old gentleman dying of obstructed intestine, and greatly distended with gas; after the first rush no gas came for a time; then the portion of the trocar outside began to move round in a semi-circle, travelling from right to left, until it reached

FIG. 1.



a certain point, when there was an immediate escape of gas, the peristalsis ceased and the trocar resumed its former position, the whole proceeding going on with the regularity of clock-work for a considerable time, a period of complete rest being followed by a gurgle in the intestine, which warned us that the trocar would begin to move. Doubtless, a similar regular action goes on in health as the contents of the bowel move, and, according to the portion of the tumor pressed upon and the part of the bowel pressing, would be the first impulse to turn, which each succeeding peristaltic movement would increase, unless the elasticity of the pedicle was sufficient each time to draw it back into its original position.

Whatever theory we accept as to the mechanism which starts the twist, I think we must admit that the shape and regularity or irregularity of the surface of the tumor must have an important bearing, and this is supported by the relatively large number of dermoid tumors found in my tables—eight out of fifty-seven; these tumors very commonly have hard projections from their walls upon which the motive force would naturally gain a purchase. The total number of dermoid tumors in the six hundred ovariectomies is only forty, or six and a half per cent., while the number of dermoid tumors among the cases of rotation is over fourteen per cent. I have omitted in the tables certain columns which will be found in my complete ovariectomy tables, because I wished to keep the former within reasonable space. Among these columns is that stating the weight of the tumors; it is of interest to remark, however, that tumors with twisted pedicles are usually of small size, thirty-six of them under ten pounds in weight, many of them five pounds or under, and only eight being twenty pounds or over; all the

bearers of those, who gave a reliable history, fixing the acute attack at a period when the tumor was in its early growth. This is only what one would expect, for when the tumor becomes large enough to distend the abdominal parietes it would be impossible for any intraperitoneal forces with which we are acquainted to rotate a tumor thus firmly held.

We now pass from the few facts and plentiful theories as to the etiology of the condition to its pathological results, which are very definite. First, we have interference with the circulation; the firm arteries, resisting pressure, continue to pump in blood, which the yielding veins cannot return quickly enough, so that congestion with exudation of serum, rupture of vessels and extravasation of blood, and rapid enlargement of the cyst result. These processes are accompanied by acute pain, chiefly referred to the pedicle, and due to the pressure to which its nerves are subjected, but also in extreme cases extending over the whole surface of the tumor; also by reflex symptoms, such as vomiting and collapse, and by fainting and pallor, the result of the internal hemorrhage. The strong fibrous covering of the tumor prevents rupture of the external vessels, and in the majority of cases confines the effused blood; but if, as sometimes happens, previous inflammatory changes in the cyst-wall have caused blocking of vessels and deficient nutrition of portions of its substance, these, being soft and lacerable, give way, and the mixture of ovarian fluid, serum, blood and clot is poured into the peritoneum. This accident is, as we have seen, often speedily fatal; but in many cases, the pedicle vessels being closed by clot, the hemorrhage ceases, the effused matters, after causing more or less peritonitis and effusion of parts, are absorbed, and the patient slowly recovers, till the rent in the cyst heals, and the adhesions affording a new blood supply, the tumor starts growing again. A glance at the adhesion column in my tables will show that in the great majority of the cases extensive adhesions are the rule, but there are a few exceptions, due apparently to the twist being only partial, or taking place so gradually that the tumor is able to accommodate itself to the change in its blood-supply, and either enlarges very slowly or ceases to grow at all, and gets smaller from the gradual reabsorption of its fluid contents. Some few cases are on record in which a tumor atrophied and ceased to be a cause of trouble in this way. Exactly a fifth of my cases had no adhesions; several of these were only partially twisted, and in only one of the non-adhesive tumors was the pedicle completely obstructed, and in that one there was a very clear history of a gradual twist, the symptoms recurring at each monthly period.

It seems perfectly clear that whatever amount of twisting there may have been going on, it is only when the acute stage is reached that the peritoneum becomes involved and adhesions take place. Thus, when operating, one could by the nature and strength of the adhesions usually

fix pretty nearly the length of time which had passed since the acute stage; just as one can say, this patient has had several successive attacks, being guided to this conclusion by the varying condition of the extravasated blood.

The adhesions are pathological in their origin and in their after-growth, for without them the tendency would be toward atrophy; whereas, through them the tumor speedily obtains a fresh blood-supply and starts into fresh activity. They have also more immediate ill-effects, leading, in some cases, to discharge of the cyst contents into the bowel or bladder, and in others, to fatal obstruction. Then, when ovariectomy has to be performed, they somewhat, though not greatly, increase its immediate risks, and also those more remote, such as recurrence of growth and obstruction of intestine.

FIG. 2



Showing universal nature of adhesion.

The immediate mortality of ovariectomy in these cases is not much, if at all, in excess of that of any large number of cases of other nature. Four only of the fifty-seven died, and two of these deaths were certainly due to infection of the cyst contents by tapping rather than to the mere rotation or its effects on ovariectomy.

We must now return to the history column, and by its aid study the diagnosis of rotation. If the patient be known to have an ovarian tumor before she suffer from any of the symptoms there described, their appearance should at once put her medical attendant on his guard, and cause him to seek for confirmatory evidence in support of

the suggestion they make, prepared to advise early ovariectomy if the diagnosis is strongly probable or certain.

If the presence of the tumor be not suspected before the acute attack, it may be much more difficult to make a diagnosis, because the patient will be in such pain that examination is difficult or impossible, and the peritoneal symptoms may rapidly supervene and mask those more directly due to the rotation. Any sudden attack of pain in the situation of either ovary, especially if it occur in connection with menstruation or pregnancy, should be a ground for a careful bimanual examination at the earliest possible opportunity, when the tender, twisted pedicle will very probably be felt to one or the other side of the uterus. I was able to feel it distinctly before operation in a large number of my cases, and have no doubt it would have been more readily detected in others, had they come under my notice while it was tender, and before it was masked by surrounding adhesions.

The other symptoms which are important in making a diagnosis are sudden increase in the size of the tumor, usually accompanied by faintness, pallor, quick pulse and other signs of internal hemorrhage. These symptoms are often accompanied or quickly followed by those of peritoneal disturbance, tympanites masking the tumor, nausea or vomiting of green or bilious fluid and difficulty in passing down the flatus which has rapidly accumulated in the bowels, from the muscular coat losing tone as a result of the peritonitis. Sometimes there is hemorrhage from the uterus, but this is not a constant or even a common symptom. If any portion of the cyst-wall has become soft and diseased, from the blocking of vessels already referred to, it will very likely give way, increasing the peritonitis; then, as this subsides, the tumor will have become smaller or perhaps have disappeared, with diarrhoea or profuse flow of urine. The illness brought about by this acute stage of the twist may pass off quickly or may last many weeks; and the nature and extent of the adhesions probably depend upon the longer or shorter duration of the peritonitis.

If it were possible to make an immediate diagnosis, I think there can be no doubt that the proper course would be immediate ovariectomy before peritonitis sets in; if, however, the symptoms of collapse and hemorrhage have passed and those of acute peritonitis become marked before the surgeon sees the patient, I am certain he will be wise to hold his hand and let the acute stage pass before performing ovariectomy.

If there is reason to believe that hemorrhage is still going on and the patient's life is obviously in danger from this cause, all risks must be faced and ovariectomy performed. Such a case was No. 21 in my table, but the peritonitis continued and became more general after operation, the patient sinking in forty-one hours from obstruction of the intestines. The more I see of abdominal surgery the more I am convinced that

operation during acute peritonitis is very dangerous, whereas, in the subacute or chronic stage, the patient bears operation as well or better than with a perfectly healthy peritoneum.

There is abundant evidence that rotation of an ovarian tumor is, in a certain number of cases, an accident immediately dangerous to life; but so is any operation during acute peritonitis, and the large number of cases which I here record shows that the majority will get over the acute attack if kept quiet and properly treated, and may then be operated upon with as good a chance of success as if the rotation had never occurred. Most likely, the majority of the cases that die would get well if the condition was correctly diagnosed and treated, absolute rest, ice to the head or to the abdomen to keep down the temperature, opium to allay pain and control the peritonitis and careful rectal feeding and stimulation to support the strength being the leading indications.

It is probable that the rotation is generally a slow process, a certain amount of twisting gradually taking place and causing congestion and increased growth for some time before some sudden change in the circulation or some mechanical accident causes a complete venous block, and the arteries still forcing blood into the tumor, the acute stage is reached.

I will now briefly recapitulate the facts which my tables seem to establish, leaving the theoretical suggestions I have ventured to bring forward to be confirmed or disproved by further experience.

Rotation of ovarian tumors is of frequent occurrence, Rokitansky's observations on the dead showing that it occurs in over thirteen per cent., and mine, on the living, that it occurs in about nine and a half per cent. of all cases of ovarian tumors; the difference in our figures being due, 1st, to the fact that early ovariectomy being now the rule, more tumors are removed before they have a chance of rotating than at the time he made his observations; 2d, to the fact that a certain number of cases will probably die of the complication, and these do not come into my tables.

It occurs with greater frequency during the period of active menstrual life than at the two extremes, and more often in married than in single women.

It is so frequently associated with pregnancy that this condition must be considered a predisposing cause.

It is also especially apt to occur with dermoid tumors. Adhesions are the rule whenever the acute stage has been reached, but there are some few exceptions, and slight twisting does not seem to cause adhesions.

It frequently happens that the circulation throughout the pedicle is entirely cut off, but a fresh blood-supply is usually rapidly obtained through the adhesions. Tumors of the right and left ovaries are equally liable to rotation, and may twist either to the right or to the left, but the turn from right to left seems most common on the right side, and from left to right on the left side.

There is no certain evidence as to the motor force which first starts the rotation, and it seems improbable that this can ever be exactly settled, but probably different causes may act in different cases.

The steps of the process seem to be: gradual rotation, without symptoms or serious pathological change, then sudden serious symptoms, with rapid increase of the tumor, then decrease or complete cessation of growth, followed, sooner or later, by renewed activity, as the circulation through the adhesions becomes free enough to replace the diminution or arrest of that through the pedicle.

The extreme pathological result of rotation is division of the pedicle and transplantation of the tumor; Cases 7, 14, 22 and 26, in the accompanying table, illustrate this condition, and it will be observed that all the tumors are dermoids; the majority of cases of transplantation recorded by other observers are also dermoid, so that it is clear that the dermoids are not only, as I have pointed out, specially liable to rotate, but are also specially liable to such extreme rotation that the pedicle is divided.

FIG. 3.

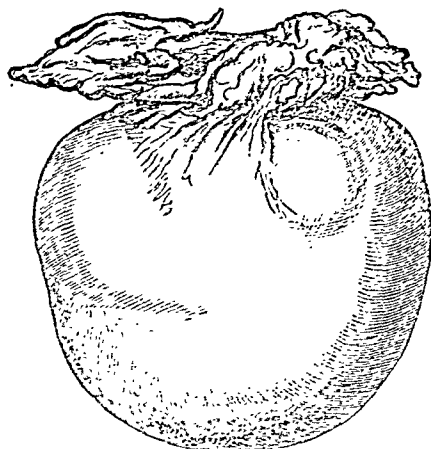


FIG. 4.



Fig. 3.—Dermoid cyst twisted off its pedicle and receiving its vascular supply from the adherent omentum.

Fig. 4.—Stump of pedicle of tumor represented in Fig. 3.

I have said that the extreme pathological result is transplantation, and I have already quoted the opinion of Sir Spencer Wells, that if the arteries are strangulated, gangrene is inevitable; but surely gangrene of the tumor would be a more extreme pathological state than transplantation and renewed growth. Yes; but I deny that gangrene ever results from twisting of an ovarian pedicle, unless there is some element introduced from without to cause death of the tissues, as in Case No. 1, in my table. Other writers, notably Tait, have followed Wells in speaking of rotation leading to gangrene; if this were true, the mortality from

rotation would be far greater than it has been shown to be, and I certainly should not have been able to record fifty-seven cases with only four deaths. Even in the cases in which sudden and complete obstruction of the arterial and venous circulation takes place, gangrene does not follow, because the tumor is enclosed in that great lymph-sac, the peritoneum, and cut off from the external agencies which cause gangrene in a limb or external part under similar conditions of obstructed circulation. The tumor may be black and discolored and full of blood-clots, but it is not gangrenous or sloughing; its condition is one of acute inflammation which rapidly spreads from its peritoneal covering to the other peritoneal surfaces in contact with it, and the peritonitis may be so severe as to cause the death of the patient; but to say that the tumor becomes gangrenous and kills the patient is contrary to all we know at the present day of the pathology of death of tissue in the living body. Blood-clot contains, in a marked degree, the vital elements which resist putrefactive changes and death, and its presence in large quantity in these rotated tumors is one of the greatest safeguards against their death, giving time for the reëstablishment of the circulation through the rapidly adhering peritoneal surfaces.

It is conceivable that in a patient with very little vitality or with a very depraved condition of the blood, rapid growth of putrefactive organisms in the tumor might lead to real gangrene or sloughing, but no such case has yet been recorded, and I think it is extremely improbable that the organisms could live in such a highly vascular and highly organized part as an ovarian tumor, and in order that these organisms may act at the moment of complete strangulation, they must already be occupying the ground. Of course, in cysts that have been tapped, and into which organisms may thus have gained access from without, the conditions are altogether changed, and then, as in my case, if acute strangulation follow, real gangrene may result. It is also possible that the Fallopian tube may bring the elements of septic change into contact with a strangulated ovarian cyst, and produce a true gangrene, and this may be the pathology of some of the cases fatal after delivery or abortion; but to prove the truth of the theory we must have careful microscopic examination of the tissues in such a case, showing the presence of the cocci, and cultivation experiments also, if we are to be sure that the cocci are those known to produce poisonous change in the blood. I know of no such demonstration having yet been made.

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TWO CASES OF TYPICAL IMPETIGO SIMPLEX.¹

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CONSIDERABLE scepticism obtains in the minds of some eminent dermatologists concerning the existence of a distinct disease of the skin entitled to the name impetigo. They, for the most part, regard all such manifestations as forms of pustular eczema, as impetigo contagiosa or as lesions due to parasites or to external irritants. Recently, Dr. T. Colcott Fox, of London, in his annual report of the Department for Skin Diseases in the Westminster Hospital,² states that he does not recognize impetigo; and that if such an affection does exist, he has doubtless confounded it with impetigo contagiosa. In view of these facts and that I am quoted by Dr. Fox as advocating the existence of this disease, a brief account of two cases may prove of interest. They may be regarded as typical examples of this dermatosis. Impetigo must be looked upon as one of the rarer cutaneous manifestations, and, it may be added, I have met with but few instances in which the features were so sharply defined as in the present cases. The well-known so-called eczema impetiginosum, as well as impetigo contagiosa and ecthyma, are all, of course, to be excluded. To these diseases I shall refer again.

The notes of the cases, it may be stated, were made at the date of observation.

CASE I.—The first is that of a boy, aged four years, a well-nourished, stout, hearty-looking child. The mother states that he has always heretofore enjoyed excellent health, and that this is the first disease of the skin he has ever shown. It began two weeks ago with slight itching, which was soon followed by "whitish lumps, like hives;" shortly after this yellowish-white lesions—pustules—appeared, a few at a time, "lasting several days and drying up." They formed rapidly, from three to five days sufficing to arrive at maturity. There were slight feverish

¹ Read before the American Dermatological Association, at the Eleventh Annual Meeting.

² Vol. ii., London, 1896.

symptoms in the beginning, but not any since, although the child is still restless and scratches himself at night. The bowels are somewhat constipated but the appetite remains good.

At the present time there exist about two dozen lesions, situated mostly upon the fingers, toes and legs. They are typical pustules, and vary in size from small to large split peas. In form they are uniformly semi-globular, or dome-shaped, and are raised about a line above the surrounding healthy skin. In no instance are they either acuminate or umbilicated. They are firm; have thick walls; and are tensely distended. In passing the hand over the surface they can be readily detected as firm, distinctly defined elevations. They are mostly of a pale sulphur-yellow or straw color, but in some instances are whitish-yellow, and are seated upon extensive bright reddish, highly inflammatory, non-indurated bases. They are, moreover, discrete, and manifest no tendency either to aggregate or to group. The regions involved are the neck, arms, hands, hips, thighs, legs and feet. The face and scalp remain free. There is one large and conspicuous lesion on the dorsum of the foot.

The case was seen on several occasions subsequently, the lesions each time showing signs of rapid involution. Crusts, somewhat friable, yellowish in color, formed, and in the course of a few days dropped off, leaving a circumscribed reddened surface or spot, which in a short time disappeared. The process showed itself to be benign and superficial in character, and ran its course in from two to three weeks. No treatment, either local or internal, was employed.

CASE II.—The second case is that of a boy, likewise four years of age, stout, ruddy, and healthy looking, who was brought to me with a disseminated, discrete, distinctly pustular eruption, which had appeared seven days before. The mother stated that the child was in good general health, and that digestion and the bowels were in proper order. The skin disease had manifested itself first about the face, then about the hands. At present it consists of twenty or thirty disseminated, some few acuminate, but mostly semi-globular, small pea-sized, inflammatory pustules with slight areolæ. They are yellowish, opaque, and, for the most part, without signs of crust. The older lesions are whitish, with only faintly marked areolæ, and are sharply defined and conspicuous. They occur about the eyebrows, eyelids, bridge and side of the nose, and over the temples; also on both hands, including the fingers, which are swollen, and it is here that the disease shows itself most markedly. The backs of the hands, palms and fingers are studded with numerous, discrete lesions, pea and bean sized, circumscribed and semi-globular, and are surrounded with defined areolæ. In form they are rounded or ovoidal, and they are distinctly pustular, being opaque and of a whitish-yellow color. They are elevated about a line above the surrounding healthy skin; and are, for the most part, tensely distended, firm to the touch, have thick walls, show no tendency to rupture, and at a distance resemble in appearance small whitish, sugar "mint drops" stuck on the skin. There is no itching, but the hands feel sore.

The child was seen on several occasions during the following week, and but few new lesions appeared. The older ones became larger, whiter, and crusted into rather friable, yellowish crusts, while some few became flaccid, and through contact had been ruptured, discharging contents streaked with blood. In addition to the impetigo a slight herpes zoster

dorso-pectoralis now made its appearance, which ran a benign and rapid course. The treatment had from the beginning been expectant, and the disease pursued a course ending in spontaneous cure in from two to three weeks.

In both of these cases striking pictures are shown, representing a clearly defined, distinctive disease, the lesions being peculiar pustules which cannot be confounded with those of other pustular diseases. They begin as pustules and run their course as such. The process is a simple and benign one; superficial; leaves only a slight pigmentation, which soon passes away; and in both instances cited ran an acute and definite course. The disease is not contagious. It possesses none of the features and characteristics of eczema, the lesions differing in many respects from those of pustular eczema, the "eczema impetiginodes" of older writers. They are discrete, with no disposition to coalesce; are variable in size, for the most part large, the size of a pea, or, occasionally, even a finger-nail. They differ from eczematous pustules, moreover, in possessing thick, firm, resisting walls, with no tendency to rupture, or to break down and discharge; finally, in being disseminated and in occupying the general surface with no disposition to localize.

From impetigo contagiosa the lesions differ in being from the beginning much more distinctly pustular; in having firmer and thicker walls; and in presenting larger and more bulky crusts. The history of contagion is also wanting. It may further be stated, that there is also a marked difference between these lesions and those of simple ecthyma, which are flatter and tend to spread more evidently on the circumference; yellower, showing a more active pyogenic nature; and more hemorrhagic, indicating a debilitated state of the tissues, the subsequent crust being brownish. In looking into the etiology of the two diseases we find impetigo to occur, as a rule, in healthy individuals, and ecthyma in the broken-down or cachectic.

Idiopathic simple impetigo must also be distinguished from those pustular lesions which not infrequently arise as the result of external irritants and from animal parasites. These causes play no part in the form of disease under discussion. The disease which I have endeavored to illustrate by the two cases just reported, corresponds to the "impetigo sparsa" of Bateman,¹ Wilson,² and Hillairet and Gaucher,³ and others, and in this country has been described by myself,⁴ Hyde,⁵ Robinson,⁶ Buckley⁷ and Van Harlingen.⁸

¹ Practical Synopsis of Cutaneous Diseases. London, 1813.

² Diseases of the Skin. London, 1867.

³ Mal. de la Peau. Paris, 1885.

⁴ Treatise on Skin Diseases, 3d edition. Philadelphia, 1882.

⁵ Diseases of the Skin. Philadelphia, 1883.

⁶ Manual of Dermatology. New York, 1884.

⁷ Manual of Diseases of the Skin. New York, 1882.

⁸ Handbook of Skin Diseases. Phila., 1884.

A CONTRIBUTION TO THE STUDY OF FRIEDREICH'S ATAXIA.¹

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THE definition given by Friedreich, which suited well the cases reported by him, needs considerable modification in order to accord with our present knowledge of the disease, and might read as follows:

Friedreich's ataxia is a chronic, systemic inflammatory degeneration of the spinal cord, developing usually in infancy or childhood, in cases in which there has probably been an arrest of development of the cord during foetal life; this being the result of some hereditary predisposition. It is situated chiefly in the posterior columns, the lateral and cerebellar tracts and the columns of Clarke, though other parts of the white and gray matter are very commonly somewhat affected, and the sclerosis extends slightly into the medulla. The affection is characterized clinically by a disturbance of the coördination of the bodily movements, developing gradually, advancing from below upward and finally involving the organs of speech. Curvature of the spine, talipes, vertigo and nystagmus are frequent. The patellar reflex is nearly always absent. Paralysis and slight sensory disturbances are not uncommon in advanced cases. Trophic, vasomotor and visceral affections are unusual, and any involvement of intellect is probably accidental.

The cases under my observation are briefly as follows:

CASE I.—Sadie T., æt. 23, single. Family history negative, except that the brother was affected by the same disease. The patient was well until 10 years of age, when an unsteadiness of the hands and of the gait appeared, not at all like chorea. After typhoid fever and measles, a few months later, the ataxia was so much worse that the patient was unable to walk without crutches, though the incoördination of the hands was much the same. The disease steadily grew worse; at 16 years the patient was unable to walk at all, or even to sit upright, and speech became involved.

Present condition, August, 1887. The patient can barely move the legs at all. There is slight talipes equino-valgus of both feet; no atrophy of the legs; no patellar reflex. There is some scoliosis of the dorsal region. The grasp is strong, but claw-like; the fingers are held flexed; there is no tremor, but a slow ataxic movement, resembling athetosis, appears while the hands are lying passively in the lap. On voluntary effort great incoördination of the hands develop, not increased by closing the eyes. The muscles of the arms are large and strong. There is a slight jerking motion of the head, but no true tremor; the speech is irregular and jerky, and a very slight and inconstant nystagmus on

¹ Based upon an analysis of 143 cases, collected and tabulated by the author in the Transactions of the College of Physicians of Philadelphia for 1888.

extreme lateral motion can be detected. The eye-ground and the thoracic and abdominal viscera appear to be normal. There is no sensory affection, except the occasional presence of a girdle sensation. The intellect is normal.

CASE II.—George T., æt. 21, single, brother of the last case. At the age of two years he suffered from some acute nervous disease, probably anterior poliomyelitis, leaving him somewhat lame, and with the left leg and thigh considerably wasted and weakened. When 9 years old he had measles, followed by pneumonia, and on recovery was unable to walk without crutches or to sit erect, though the upper extremities remained uninvolved. The ability to walk was partially regained, but the disease still progressed, and at 18 the arms became involved. There is sometimes involuntary spasm of the right leg at night.

Present condition, August, 1887. The left leg is atrophied and powerless; the muscles of the right leg not wasted, but the muscular power decidedly diminished. The knee-jerk is abolished; there is marked ataxia of the legs when the patient is supported on them; the back is bent to the right. The muscles of the arms are unusually well developed and the grip powerful. There is marked ataxia of the arms and hands on voluntary movement; not increased by closing the eyes. The head has a slight ataxic movement, the speech is a little jerky, there is slight nystagmus on lateral motion. The eye-ground and the thoracic and abdominal viscera are normal. The only affections of sensation are a slight diminution of cutaneous sensibility in the upper and lower extremities and a decided involvement of the muscle sense in the latter region.

CASE III.—Annie C., æt. 26, single. Family healthy, except that a brother died of the same disease at the age of 9 years. The patient had scarlet fever at 9 years of age, and after recovery appeared to be weak in the legs, and to have a staggering gait. This gradually increased until at 16 years she could not walk at all. At 22 weakness in the arms appeared. It is not known at what date the affection of speech developed. She complains sometimes of difficulty in swallowing, and of spasmodic contraction of the legs at night.

Present condition, August, 1887. The patient is unable to sit erect, and can move the legs but little. There is slight talipes equino-valgus and dorsal flexion of the toes. The muscles of the lower extremities are but little atrophied; the knee-jerk is abolished. The vertebral column exhibits lateral curvature. The hands are claw-like and their movements very ataxic, though when at rest they lie in the lap without motion. The ataxia is not notably worse when the eyes are closed. The grip is fairly good, but infantile; the muscles of the arms somewhat wasted. There is a slight tremor of the tongue, a trembling motion of the head, particularly on talking or on excitement, and slight nystagmus, but the eye-grounds are normal. Speech is slow and somewhat scanning. Affections of the thoracic and abdominal organs and of the intellect are absent. Tactile sensibility is evidently diminished, but sensation is normal in other respects.

Dr. W. C. Warren, of Waterford, Mississippi, has sent me the notes of 4 cases, 3 of which were very briefly reported some years ago. A short abstract of them is as follows: The father of the family is of a

nervous disposition, but in other respects the family history is negative. In each of the first 3 patients the disease began at the age of 8 years, with staggering, noticed only when first rising in the morning and disappearing later. The unsteadiness after a time became permanent, and the affection next involved the arms, producing marked ataxia, with a tendency to choreiform movements. In the oldest child, Nannie W., now aged 29, the power of walking was lost after a severe attack of bilious remittent fever at 13. Affection of speech began at 23, making it now almost totally unintelligible. There is slight trembling of the tongue, curvature of the spine, painless spasms of the leg, no nystagmus, and possibly slight affection of intellect, as the patient cries almost constantly without known cause. The lower and upper extremities are nearly powerless and held flexed; the muscles, especially the extensors, decidedly atrophied. The knee-jerks are absent, talipes equinus present; there is no definite affection of sensation; the pulse is persistently rapid and small. There is vertigo and some incontinence of urine. The symptoms of the second patient, Thomas W., aged 17, resemble those of his sister, though not advanced to so great a degree. There is, moreover, no vertigo or trembling of the tongue; speech is only slightly slow; the intellect is normal; and the ability to move the arms and legs—though not to walk—is still retained, while all movements become much more ataxic on closing the eyes. The surface of the body is cold. Robert W., aged 15, is less diseased than his brother, in that speech is still unaffected, and the ability to walk by holding to the furniture is still preserved. There is, however, decided vertigo. The last patient, Nettie W., aged 8 years, is only beginning to show evidences of the disease. Since 6 years of age it has been noticed that she staggers when rising in the morning, and only after some effort and repeated balancings with outstretched arms, can she succeed in preserving her equilibrium. After a little exercise this unsteadiness disappears. There are as yet no other symptoms, except that the patellar reflexes are diminished.

HISTORY.—As regards, now, the history of the disorder, Friedreich reported the first 6 cases in 1863, and 3 more in 1876. Up to the close of 1876 11 others had been described, making 20 in all. By the end of 1882 the number had reached 47, and now equals 143. These are divided among authors as follows: Friedreich, 9; Carre, 1; Bradbury, 1; Carpenter, 2; Kellogg, 2; Dreschfeld, 3; Kahler and Pick, 1; Schmid, 2; Seeligmüller, 2; Hollis, 1; Gowers, 5; Brousse, 1; Hammond, 6; Coleman, 3; Warren, 4; Leubuscher, 1; Power, 1; Quinke and Rüttimeyer, 2; Rüttimeyer, 7; Jakubowitsch, 1; Erlenmeyer, 1; Wälle, 2; Teissier, 2; Musso, 4; Massalongo, 2; Charcot, 2; Botkin, 1; Ormerod, 10; Buzzard, 1; Fowler, 3; Fazio, 1; Vizioli, 11; Palma, 1; Seguin, 5; Sinkler, 5; Smith, 5; Putnam, 2; Prince, 1; Fellows, 1; MacAlister, 1; Fagge, 1; Descroizilles, 1; Bury, 4; Galassi, 1; Erlicki and Ry-

balkin, 1; Glynn, 1; Freyer, 3; Blocq, 1; Stintzing, 3; Ferrier, 1; Mastin, 3; Mendel, 1; Shattuck, 1; Joffroy, 1; Osler, 1; Griffith, 3. Besides these there are upward of 57 cases occurring among the brothers and sisters or other relatives, but not under professional observation. Many of these were undoubtedly instances of Friedreich's ataxia.

NAME.—The affection has been variously designated as "hereditary ataxia" [Friedreich], "congenital ataxia" [Mastin], "generic ataxia" [Smith], "family ataxia" [Féré] and "Friedreich's disease" [Brousse]. The serious objection to the first four titles is that they are not always applicable, and express conditions as necessary, which are not always fulfilled. Even the best of them, "family ataxia," is not suitable, for though the 143 cases are divided among only 71 families, there are 24 instances in which but 1 child was affected. The last of the four titles is most commonly employed, and would be the best were it not that paramyoclonus multiplex is also called "Friedreich's disease." To avoid all confusion, I much prefer the name "Friedreich's ataxia," which designates the most prominent feature, and yet imposes no limitations to be violated; and though it may be objectionable in the using of an author's name, it seems the best that can be chosen in the present state of our knowledge.

ETIOLOGY.—*Heredity.* Friedreich's ataxia is essentially one of the hereditary diseases, but the adjective must be taken in the broad sense on which Möbius insists. Direct similar inheritance of the disease itself, or of some form of ataxia, is reported in only 33 cases in 16 families of brothers and sisters, and most of these are very doubtful examples of it. Thus Rütimeyer reports 8 cases in 4 families of cousins, whose great-great-grandfather was reputed to have had an ataxic gait. Other instances are described by Brousse, Carre, Botkin, Mastin, Bradbury and others; but only in the cases recorded by Vizioli was there an undoubted example, confirmed by professional observation, of children with Friedreich's ataxia, springing from a father with the same affection. The patients of Smith are probably another instance of this. Polymorphic inheritance—in which there have been other neuropathies, alcoholism, tuberculosis, syphilis, consanguinity, etc., in the family—has in some respects exercised a much more powerful influence in the production of Friedreich's ataxia. Great nervousness or neuropathies, other than the affection in question, are reported in 58 cases; sometimes in the parents only, often in the grandparents, uncles or aunts as well; and their influence is undoubted. Friedreich thought that alcoholism had a strongly predisposing action, since it was present in the parents of 6 of his 9 cases; but its influence has been greatly overrated. It is reported present in the parents of only 31 cases; and absent in the parents, but present in other relatives, of 13 others; but in 7 cases alone was it the only hereditary predisposing cause discovered; and it may have been but

a coincidence here. Tuberculosis has virtually no influence, except as it debilitates the constitution of the progenitors. The same is true of syphilis, which is mentioned as possibly present in but 2 families. The case of Palma's is interesting: of 2 children of a phthisical mother, suckled by her, one died of phthisis, the other developed Friedreich's ataxia; the other children, fed by a wet-nurse, enjoyed good health. Consanguinity is reported in 4 families, and in 3 of them seems to have been the active predisposing cause.

Among the brothers and sisters of cases reported, there have sometimes existed conditions pointing to the existence of an inherited family taint or tendency to the disease. Thus there were 31 other children reputed ataxic in 20 families, but not seen by a physician. Certain other suspicious conditions were present in 13 families; such as stillbirths, early deaths, feeble reflexes, lack of moral sense, phthisis, etc.

Age. The predisposing influence of age in Friedreich's ataxia is shown by the fact that in over one-quarter of the reported cases the first symptoms were perceived before the age of 6 years; and in over one-half before the age of 11 years. In at least 15 cases the disease began in infancy, and in not more than 25 did it develop after 16 years of age.

Sex. The disease has attacked rather more of the male sex; the numbers being 86 males and 57 females.

Acute diseases. The influence of acute, and usually febrile, diseases in precipitating the onset of Friedreich's ataxia is seen in 20 cases. As a rule, the symptoms of the nervous affection appeared immediately on recovery from the acute disease, but in a few instances their development was delayed so long (two years after smallpox, in some of Musso's cases) that the causal relation appears doubtful.

CLINICAL HISTORY.—The disease usually begins with weakness and unsteadiness of the lower extremities, and an oscillating, staggering gait, with frequent falls. Very exceptionally there are other symptoms preceding or attending this; such as eclampsia, vertigo, pain in various parts, curvature of the spine, choreiform movements, dorsal flexion of the toes, palpitation of the heart, gastric disturbance, etc. These are probably often accidental; and disregarding them it appears that the lower extremities were first attacked in 114 of the 143 cases. In 10 instances, the arms, and in 8, the arms and speech were involved simultaneously with the legs. In 2 cases the legs and speech were first attacked, and in 2, the arms alone. The average lapse of time, however, before the upper extremities became ataxic is 6 years, as far as statistics allow of calculation; but the range of variation is very great. Thus in one of Dreschfeld's cases, the interval was 20 years, and in one of my own, 17 years. Ataxic movements of the head and trunk may appear with the affection of the arms or later. The appearance of bulbar symptoms—the affection of speech being usually the first—averaged

only $1\frac{1}{2}$ years later than the incoördination of the arms in 31 cases in which the time of the development of both classes was accurately stated, and the variation was not great. In 18 of these, both classes of symptoms developed at the same time. As the disease advances there may appear more or less paralysis, muscular atrophy, talipes and other contractures, curvature of the spine and, possibly, affections of sensation. The patient may become unable to walk, and speech may be almost unintelligible. Finally death ensues from asthenia or, oftener, from some intercurrent disease. The influence of acute, and usually infectious, diseases in accelerating the course of the disease was seen 14 times in 13 patients, 5 of whom lost the power of unassisted locomotion during the acute illness. The same result followed parturition in one of Friedreich's cases.

SYMPTOMS.—*Ataxia.* Motor ataxia of the lower extremities is directly stated to have been present in 128 cases, and in others, as in some of those of Hammond, it is as directly implied. Freyer states distinctly that there was no ataxia in his patient, in whom, however, the disease was only beginning. The incoördination was increased by closing the eyes in 34 cases, and not increased in 19. The gait is only in a few instances described as like that of tabes. By far more characteristic of Friedreich's ataxia is an "oscillating" gait; "like that of a drunken man," as it is sometimes described. Musso speaks of the gait as exhibiting a lateral projection of the feet, instead of the forward propulsion seen in tabes. Ataxic station is expressly mentioned or implied in 73 cases, and was undoubtedly present in many more. Romberg's symptom was absent in 10 of these, and present in 49. Ataxia on motion of the upper extremities is reported in 111 cases, in 21 of which it was increased by closing the eyes, and in 26 not increased. The incoördination is usually very well marked, so that simple as well as more delicate movements become almost impossible. Prehension is often peculiar, the hand being spread like a claw.

Muscle sense might well be considered in connection with Romberg's symptom did space permit. Comparison between the two in the reports of cases goes to show that there is no connection between them; since in at least one-half the cases in which the muscle sense was normal, as tested by weights, etc., Romberg's symptom was present, and in other instances in which the former was diminished the latter was absent.

Static ataxia, the ataxia of quiet action, the force required to hold any part of the body quiet when unsupported, is claimed by Charcot to be characteristic of Friedreich's ataxia, and absent in tabes. Statistics show that this author and Ormerod are correct in stating it to be one of the later symptoms, and quite common in advanced cases, though it is probably oftener absent than present. It may be seen in athetoid movements of the hand, or as slow, waving motions of the arms when held

outstretched, or even as choreiform movements. Static ataxia of the head is quite frequent; shown by an irregular oscillation, either constant or only when the patient is under some excitement. A nodding of the head is sometimes seen; "like one going to sleep," as Friedreich has described it in one of his patients. Similar ataxic movements of the trunk are reported in a number of cases.

Tremor of some part of the body is found referred to in 8 instances, but is probably in most of them to be attributed to static ataxia. Only in Glynn's case was there anything which at all resembled the intention-tremor of multiple sclerosis.

Choreiform movements, referred to in 17 instances, are likewise, as a rule, only the evidences of static ataxia; being recognized by most reporters as such. They have usually been seen in the limbs, but in 6 cases, grimaces and twitchings of the face are alluded to. Signs of chorea have appeared as one of the earliest or even initial symptoms in a few cases, but statistics do not uphold the view of Pitt that the disease is usually ushered in in this way.

Spasmodic contraction of the muscles is reported in 21 cases. These occur usually in the lower extremities when the patient is sitting or lying in bed, and may or may not be painful. Spasm was also seen in the face in Fagge's patient, often drawing the mouth into a meaningless smile; while Botkin's case exhibited grinding of the teeth.

Paralysis is a common feature, though more usual in advanced cases. It is stated to have been present in 56 patients, and undoubtedly occurred in many others. The so-called paralysis early in the disease is generally merely a manifestation of incoördination. The rate of progress and the degree of paralysis are very variable. One of Vizioli's patients reached a state of complete immobility after suffering from the disease for over 40 years, while in Kahler and Pick's patient, power was nearly gone after 8 years. On the other hand, in one of Friedreich's cases there was no paralysis after the disease had lasted 24 years.

Inability to walk without crutches or assistance from some person developed in 54 instances. It depends oftener on incoördination than on paralysis, since in 10 of the cases it is said that there was no paralysis, and the designation was certainly wrongly applied in many of the remaining. Some patients had never walked; while others retained the power for over 20 years.

Contractures are usually among the later symptoms, and are chiefly represented by talipes. This was present in 27 cases, and was of various kinds, though usually equinus and equino-varus. Dorsal flexion of all or of some of the toes is reported in a number of instances. Contractures of some of the fingers or of the hands or arms are very exceptionally present. Curvature of the spine, usually lateral, and considered by Rüttimeyer to be a form of contracture, developed quite frequently (57

cases) as the disease advanced; and though it has in a few instances been observed before other symptoms appeared, its occurrence may have been accidental.

Electrical contractility has not been sufficiently studied to reveal anything of moment. In most cases, when tested, it was found normal, in a few, diminished, in still fewer, increased, and in 3, the reaction of degeneration was present.

Reflexes.—The abolition of the patellar reflex is a very early symptom, as it is a very constant one. It has been reported in 91 instances, and in 30 no observation on it was made. The abolition does not, however, always occur, since the knee jerk was merely much diminished in 7 cases, diminished in 2, normal in 6, normal or exaggerated in 1, and exaggerated in 6. This exaggeration does not necessarily exclude the presence of Friedreich's ataxia, since 2 of the cases exhibiting it belong to 2 of the most typical family groups of the disease: viz., those of Vizioli and of Musso. The knee-jerk will not be abolished unless the lumbar enlargement be involved, and it is easily conceivable that this involvement might fail to occur in undoubted instances of the affection.

The presence of ankle clonus in 2 instances of Friedreich's ataxia must be considered entirely anomalous. The cutaneous reflexes were usually normal, as far as tested; but sometimes diminished, and rarely increased.

Of trophic symptoms, the most important is muscular atrophy, which is comparatively unusual, even when paralysis is decided. It was well marked in 11 cases, and slight in 24; affecting the lower extremities more than the upper. Other trophic changes occur with the greatest rarity, and are possibly accidental.

Vaso-motor affections are chiefly represented by coldness and blueness of the feet (19 cases).

Sensory symptoms are rather noted by their insignificance. Pain of some sort, initial or among the early symptoms, is reported present in 22 cases, and absent in 79, and was usually slight and often probably accidental. Rarely it has been of greater moment, but the absence of the severe initial lancinating pain of tabes is one of the most characteristic phenomena. Pain after the disease is well under way is comparatively more common, though only observed in 47 patients, often slight and probably often unconnected with the disease. Even at this stage lancinating pain is almost unknown. Cutaneous sensibility is at times diminished (47 cases) but exceptionally increased. The diminution has usually been very slight and often questionable, but sometimes it is very well marked, as in one of Stintzing's cases, in which there was total anæsthesia of the lower extremities. Paræsthesias of all forms are rare; girdle sensation, the commonest, being referred to in but 8 instances, in one-half of which it was slight.

Affection of speech is one of the most characteristic of the bulbar symptoms. It is reported in 107 cases, and would doubtless have developed in many or all of the remaining. It is frequently characterized by a jerky, moderately rapid articulation, interrupted by sudden and irregular pauses, often between the syllables—a variety which Friedreich described as “ataxia of speech.” Speech may be typically scanning, or simply slow, or confluent, etc., and may become quite unintelligible.

The *tongue* not infrequently (24 cases) exhibits a fibrillary tremor or, less often, a more general twitching or curling. *Mastication* and *deglutition* are only exceptionally interfered with. There was *difficulty in retaining the saliva* in the mouth in a few instances. The *face* has often an expressionless appearance, giving the false impression of deficient intellect.

Eye.—Strabismus is reported in 8 cases, but may have been only accidental; diplopia and blepharospasm are referred to in a few instances; partial atrophy of the optic nerve was seen but twice; and the pupillary reflexes were always present. A characteristic symptom is nystagmus, which appeared in 56 instances, and would have doubtless been seen later in many others. It is less common than the affection of speech, and develops with or later than it. There are only 6 cases reported in which nystagmus was present, without mention of difficulty of articulation. The form is almost always “ataxic nystagmus,” as named by Friedreich; *i. e.*, appearing only when the eyes are fixed upon an object. “Static” or ordinary nystagmus is mentioned in but 3 instances. Vision was impaired in a number of cases in which no ophthalmoscopic examination was made.

The *intellect* is reported as possibly weakened in 21 instances, but in most of these the affection was more than questionable. In only a few cases does there appear to have been any actual mental involvement, and the causal relation of the disease to this is very doubtful.

Vertigo is not infrequent (29 cases); sometimes as a very early and perhaps accidental occurrence. It is often severe, and may persist even when the patient is in the recumbent position.

Visceral and *secretory disturbances* are usually slight, possibly accidental. They are reported in 42 cases in all, to be divided as follows: Affection of the bladder, 13; affection of the rectum, 4; impotence, 3 (possibly 4); disorders of menstruation, 10; palpitation, 13; persistent acceleration of the heart, 8; profuse sweating, 3; gastric disturbances, 9; dyspnoea, 5; præcordial anxiety, 2; salivation, 5; polyuria, cough, intermittent albuminuria, nervous crises, each 1. Some of these disturbances were among the early symptoms.

PATHOLOGICAL ANATOMY.—The 12 patients on whom autopsies have been made were those of Friedreich, 5 cases; Kahler and Pick, Brousse,

Smith, Erlicki and Rybalkin, Gowers and Pitt, each 1 case; Rüttimeyer, 2 cases. There has been found no change in the brain (excluding the medulla) connected with the disease, except that the pons was small in 1 instance. The medulla was atrophied in 1 case, and the cord smaller than normal, throughout or posteriorly, in 11 cases. Spinal meningitis was present in 10 cases, in 6 of which it was limited to the posterior portion of the cord. There was thickening of the ependyma of the fourth ventricle in 2 instances. On microscopical examination, there was found slight extension of the posterior sclerosis to the medulla in 5 or more cases. The cord exhibited sclerosis of the posterior columns in all 12 patients; sometimes nearly uniform throughout, sometimes more complete above than below. In 6 instances, there was a small portion of healthy white matter next to the commissure or to the cornua. The lateral pyramidal tracts were very uniformly sclerosed in 11 cases; the remaining one being the first case of Friedreich's, in which the more imperfect methods of microscopical examination then in use may have failed to reveal slight changes. It is important to observe that in 7 of the 11 there was a narrow strip of healthy tissue between the diseased portion and the posterior horn. The direct cerebellar tracts appear to have been involved in 7 cases. A peripheral zone of degeneration passing forward from this tract was seen in parts of the cord in 5 instances. The anterior pyramidal tracts were sclerosed on one or both sides to some extent in 6 cases. The columns of Clarke were degenerated in 8, and probably in 9 instances. In a few cases degeneration of various other parts of the gray matter has been reported. Inflammation in and around the central spinal canal occurred in 4 instances; and supplementary canals were seen in 3. The posterior nerve-roots were more or less diseased in all the cases; and some of the strands of the anterior roots in 1 instance. Slight alterations in some of the peripheral nerves are twice reported. The histological changes in the cord consist in an overgrowth of neuroglia at the expense of the nerve-fibres. A finely fibrillated or granular substance develops, and corpora amylacea are frequently very numerous. In 1 instance—a case of Friedreich's—the lateral tracts underwent a simple softening, instead of sclerosis.

PATHOLOGY.—Friedreich's ataxia has been variously considered as a form of tabes, a combination of this with disseminated sclerosis, a cerebellar disease and an independent affection. There seems to be no reason now to deem it other than a distinct disease, intermediate clinically between tabes and disseminated sclerosis, or, as placed more exactly by Gowers, between the former and ataxic paraplegia. The opinion of Friedreich and of some others is that the primary lesion is a meningitis, or a sclerosis of the posterior columns spreading by a meningitis. Schultze considered it a diffuse inflammation of the whole posterior half of the cord. There are, however, better reasons for believing it to be a

combined systemic spinal disease, at the least for certain parts of the cord. The early age at which it develops and the smallness of the cord in so many cases render it probable that there occurs, under an hereditary predisposition, an arrest of development of certain nervous systems during foetal life. This probably takes place, as Kahler and Pick say, at the time of the sheath-formation, since the tracts most sclerosed are the ones last to acquire medullary sheaths, according to the statement of Pitt. Later in life, degeneration of these imperfectly formed fibres occurs.

This view almost necessitates the belief in a systemic degeneration, which is further strengthened by the existence, in so many cases, of the band of healthy tissue between the diseased lateral tract and the posterior horn, as well as by the frequent absence of meningitis, either entire, or from all parts except over the posterior columns. It is clear that in such cases there could have been no spread of the disease from the posterior columns, either by contiguity or by a meningitis.

DIAGNOSIS.—The principal diagnostic symptoms of Friedreich's ataxia are: Evidences of hereditary influences, the occurrence of several cases in a family, early age of development, motor ataxia, static ataxia, affection of speech, nystagmus, talipes, curvature of the spine, some degree of paralysis; further, the absence of knee-jerk, of marked sensory, trophic, vaso-motor and visceral affections, of atrophy of the optic nerve and of affection of intellect. But, as in all diseases, the diagnosis must be based on the aggregation of symptoms rather than on individual ones. The affection is especially to be distinguished from tabes, disseminated sclerosis and ataxic paraplegia. Tabes is recognized by its development in adult life and singly, by the occurrence of severe lancinating pain, of optic nerve atrophy, of alteration of the pupillary reflexes, and often of marked trophic and visceral affections; and by the absence of affection of speech and of nystagmus. The gait, too, often differs, as already described. Disseminated sclerosis is very exceptionally hereditary, usually develops at a more advanced age, and further differs in the presence of remissions, static nystagmus, rhythmic oscillations, ankle clonus, exaggerated knee-jerk, intention tremor and disturbance of intellect; and in the absence of Romberg's symptom. Ataxic paraplegia is distinguished by its occurrence in adult life and not in several members of a family; and by the presence of increased patellar reflex, and the absence of nystagmus, and of marked affection of speech. The symptoms of Friedreich's ataxia resemble those of cerebellar tumor only in a single particular; viz., the oscillating gait; and the disease can scarcely be confounded with hereditary chorea, since the latter has a distinctly different history and mode of termination, and exhibits no truly ataxic symptoms or diminution of the patellar reflex.

DURATION, PROGNOSIS AND TREATMENT.—The course of the disease is steadily onward toward a fatal termination, and only in rare cases has there been a temporary arrest. Its duration may be only a few years, but is usually very extended, unless cut short by some intercurrent malady. One patient of Vizioli's, in whom the affection began in infancy, died at the age of 46 years. As far as I have been able to discover, 25 cases are reported to have died, but in only 1 was death evidently the result of advancing weakness; though in 5 the cause is not clearly stated. It follows, therefore, that the prognosis is most unfavorable as regards recovery; and as concerns the duration of life, must be determined for each individual case.

Treatment has been, unfortunately, of little avail, though silver, arsenic, phosphorus, zinc, etc., have been and may be tried. Every means should be used to maintain and increase the general strength by tonic treatment; such as cod-liver oil, change of air, sea bathing, electricity and massage. A plaster jacket was a great relief to one of my patients who had become unable to sit upright on account of the spinal curvature; and one of Smith's cases improved greatly under this treatment, combined with electricity.

REVIEWS.

TREATISE ON DISLOCATIONS. By LEWIS A. STIMSON, B.A., M.D., Professor of Clinical Surgery in the University of the City of New York, Surgeon to the New York, Presbyterian and Bellevue Hospitals, etc. With one hundred and sixty-three illustrations. 8vo. pp. 539. Philadelphia: Lea Brothers & Co., 1888.

THIS work, by Dr. Stimson, is the companion piece to his well-known treatise upon *Fractures*; but, unlike most such works, is an entirely separate volume. It is the most complete disquisition upon the subject in the English language, and probably in any language; not because the author is better qualified for his work than Malgaigne, Cooper or Hamilton, but on account of the vastly increased facilities for collecting illustrative material in the *Index Medicus*, the *Index Catalogue of the Surgeon-General's Office* and the mass of publications which are thus made accessible for this purpose. By means of these resources he has been enabled to present complete descriptions of several rare forms of luxation, which previously had never been adequately observed and studied, and to correct various errors which, having crept into popular text-books, have been widely diffused.

The first 116 pages of the book are devoted to the general consideration of dislocations, including statistical tables in regard to the frequency of luxations of the different articulations, the pathological changes in recent and old dislocations, the complications which may arise and the broad principles of treatment. This part of the work seeks to lay a firm scientific foundation upon which the more practical portion of the treatise may securely rest.

An instructive chapter upon non-traumatic dislocations, especially those of congenital character, forms Part II. of the work. Congenital dislocations are believed by the author to depend upon an arrest of development of the bones forming the articulation, rather than upon any injury to the child during labor or during fetal life. These congenital dislocations are found usually at the hip, and are frequently double, but the shoulder, elbow and knee are also liable to this malformation, though but rarely.

Part III. deals with special dislocations, and forms the bulk of the work, 417 pages being devoted to this subject. In the preparation of this section, we see evidence of the most thorough investigation and research. The literature of the whole world has been brought into requisition, and the result is a comprehensive and systematic description, not only of the usual forms of dislocations, but of the rare and anomalous forms which are recorded here and there in various publications as curiosities.

Beginning with dislocations of the jaw, the author describes two

unusual injuries which can also be classed as fractures, dislocation backward, in which the condyle of the jaw is driven against the anterior wall of the external auditory canal, with the effect of fracturing the wall of the canal, and of fixing the condyle in an abnormal position; the other is dislocation upward, in which the condyle has been forced through the glenoid fossa into the cavity of the cranium, and is a genuine fracture of the base of the skull, and an exceedingly fatal one, too.

Dislocations of the sternum are the subject of a complete chapter, as are also those of the ribs. Considerable space is devoted to the consideration of dislocations of the clavicle, and it is satisfactory to note that the dislocations of the acromial end of the clavicle are spoken of as dislocation of the clavicle, instead of dislocation of the scapula, which would be the ordinary nomenclature. All these luxations are acknowledged to be easy to reduce, but very hard to retain in position.

Owing to the anatomical configuration of the shoulder-joint, and to its exposed situation, luxation of this joint is of great frequency, forming about fifty per cent. of all cases; hence the consideration of these dislocations is of the greatest importance. Dr. Stimson adopts a classification which differs slightly from that which is in common use. Using the direction in which the primary displacement of the head of the humerus occurs as a guide, he adopts the following schedule:

Anterior.	{ Subcoracoid; very common. Intracoracoid; exceptional. Subclavicular.
Downward.	{ Subglenoid; uncommon. Erecta; very rare. Subtricipital.
Posterior.	{ Subacromial; rare. Subspinous; very rare.
Upward.	Supraglenoid; very rare.

This classification differs first in the substitution of the term "intracoracoid" for "subclavicular," and all dislocations in which the head of the humerus lies to the inner side of the coracoid process are placed in this subdivision. It is somewhat startling to be told that subglenoid dislocation is uncommon, when most English and American authors declare it to be the most frequent of all the humeral dislocations. A sub-variety, *luxatio erecta*, is added to this group of subglenoid dislocations. Only seven cases of this injury have been described; one of which was observed by Dr. Alberti, of the Charité, in Berlin; and the reviewer well remembers hearing the case discussed in the wards of the Charité a short time after its occurrence. The subtricipital dislocation is another anomalous variety, only one case having been described. The upward dislocation, or supraglenoid, has been seen in but a few cases. The existence of this dislocation has been denied, but the cases of Holmes and Alberti, upon which autopsies were held, have proved that it is a veritable supraglenoid luxation. At a final examination, some years ago, the professor of surgery asked a student from Georgia to mention the dislocations of the shoulder, and he mentioned the upward dislocation amongst the rest. The professor thanked him, and asked him to report the first case of upward dislocation which he might meet. It seems now that we will have to include this as one of the possible luxa-

tions of the humerus, and certainly not give our students bad marks for mentioning it as such.

We are surprised that the test of Dr. Dugas, for all dislocations of the shoulder, is not thought of sufficient value to merit adequate description or a mention of the originator's name. It seems to us to be an almost infallible diagnostic sign. Hamilton's test is also ignored. It is as follows: When there is a dislocation a ruler can touch the acromion process and the external condyle of the humerus at the same time; if the bones are in their normal position, this cannot be done. These tests may not be needed by the skilled surgeon, but are very serviceable to the less dextrous general practitioner.

Quite a formidable array of traction apparatus is portrayed, but most surgeons in these days of improved methods would not dare to use them. We certainly would prefer operative interference under antiseptic precautions rather than a trial of such barbarous appliances, and Dr. Stimson holds to the same opinion. It is a satisfaction to find Kocher's method of reducing subcoracoid dislocations fully described, as it is certainly the easiest and best for most acute cases, and comparatively few practitioners are acquainted with it.

Passing over dislocations of the elbow and wrist, which are thoroughly treated in the text, let us pause to learn the author's opinion as to the difficulty of reduction of luxations of the metacarpo-phalangeal articulation of the thumb. As is well known, dislocations backward of the thumb are sometimes very difficult to reduce, and this difficulty has been ascribed to various causes by different authors. Dr. Stimson favors the view that the difficulty in reduction is due to the interposition of the anterior ligament with the sesamoid bones, and that forced dorsal flexion should be employed, in order to slide the ligament well over the head of the metacarpal bone. The tension of the short flexors also aids in preventing reduction. Forward dislocation of the thumb occurs occasionally, but does not usually present the same obstacles to reduction.

Dislocations of the hip occupy a large space in the work, and justly so. One is struck with the great value of the contributions of American surgeons to the elucidation of the pathology and treatment of this very severe accident. Dr. Stimson's classification differs again from that in ordinary use with English-speaking physicians, and whilst, undoubtedly correct, it seems to us that the usual classification is a good one for working purposes, if we bear in mind that in a few rare cases the head of the femur is found in anomalous positions. Amongst the dorsal dislocations are placed the anterior oblique and the everted dorsal, examples of which are but rarely met with, and are not described in most text-books. The treatment of dislocations of the hip has so radically changed, that the old methods of traction are scarcely mentioned. The recent procedures of manipulation were undoubtedly first introduced by Nathan Smith, of New Haven, but the perfection of the method and the correct interpretation of the principles upon which it depends, are due to the genius of Henry J. Bigelow, of Boston, and his name will always be honorably associated with this method of treatment.

We are admonished that this review has already reached sufficiently large proportions. It only remains for us to say that the treatise is published by Lea Brothers & Co., of Philadelphia, and that the typographical work is good and the illustrations well executed and, with a

few exceptions, demonstrative. Dr. Stimson has produced a most valuable book, and one which will be regarded as authoritative for a long time to come.

R. W.

AN ILLUSTRATED ENCYCLOPÆDIC MEDICAL DICTIONARY. BEING A DICTIONARY OF THE TECHNICAL TERMS USED BY WRITERS OF MEDICINE AND THE COLLATERAL SCIENCES; IN THE LATIN, ENGLISH, FRENCH AND GERMAN LANGUAGES. By FRANK P. FOSTER, M.D., Editor of the New York Medical Journal, with Collaborators. Volume I. New York: D. Appleton & Co., 1888.

AN important place certainly exists for a work having the purpose of this dictionary. As Dr. Foster remarks in his preface, a comprehensive dictionary giving adequate attention to English, French and German terms in the same vocabulary has not hitherto been produced. Such a want was partially recognized by Littré and Robin, in appending brief Greek, Latin, German, English, Italian and Spanish vocabularies to their revised edition of Nysten's *Dictionnaire de Médecine*. It was more nearly met in Palmer's *Pentaglot Dictionary*. But a lexicon in which the student of medical science and literature in the three modern languages which contain their largest portion, could find all technical words with English definitions, has not before existed. There is great interest, therefore, attaching to this attempt of Dr. Foster and his eleven collaborators to accomplish so serious and useful a task.

Anyone's first observation in examining the present volume must be, that its size, being the first of four volumes, is immense. It is a quarto, with small print, 752 pages. The whole work, therefore, may be expected to consist of about 3000 pages. Webster's *Unabridged Dictionary*, of all words in the English language, has less than 2000 pages; Harper's *Latin Dictionary* (1879), with a slightly smaller page but smaller type, has 2019 pages; Liddell and Scott's *Greek Lexicon* (1883), with a page a little larger and similar type, has 1776 pages. Yet these works include all the words of the languages respectively attended to; while this deals only with those belonging to medicine and the sciences collateral to it.

When we come to ascertain how this great magnitude is accounted for, we find that it is not by all, or nearly all, the subjects mentioned being treated extensively as in a cyclopædia. Less than 140 articles occupy more than half a page. Most of the terms are defined briefly, with, generally, their equivalents in Latin, French and German; sometimes in Italian and Spanish. But a number of articles are excessively long. *Acid*, the English word, has a page and a half. But *acide*, French, has more than fifteen pages; consisting of a catalogue of French names for acids, with their English equivalents; some cross-references also being given. For much of this occupation of space, we can see no good reason. Take a few lines at random: "A. amido-hippurique; amido-hippuric acid. [B.] A. amido-hydrocinnamique; amidohydrocinnamic (amidophenylpropionic) acid. [B. 38] A. amido-iséthiorique. Amidisethionie acid; taurine. [B.] A. amido-isocaproique. Amido-isocaproic acid; isoleucene. [B.] A. amido-isophtalique. Amido-

isophthalic acid. [B.] See amidophthalic acid." Except where a different name is also used (as taurine, isoleucine, etc.) for the same substance, ninety-nine in a hundred of these renderings from French into English are so obvious as to be quite superfluous. A few words of explanation of the French terminations, under the heading *acide*, would suffice for any student. Similar redundancy occurs with the Latin term *acidum*, which has a catalogue filling nearly five pages. Yet each of these acids will have, under its English name, at least a brief article to itself. *Acetic acid*, for instance, has thirty lines; *acetum*, nearly a page. Under *artère*, *arteria*, *arterie* and *artery* there are nearly thirty pages. Those under the French, Latin and German heading are alphabetical lists or catalogues of all the arteries of the human body, rendering the foreign into English names. Under the English headings, *artery*, we have these all again alphabetically enumerated, with a brief description and twenty-five good illustrations, after Henle. Pausing here, we ask, For whose benefit is this manner of presentation of the arterial system? Will the medical student use it for his study of anatomy? Probably both he and the "busy practitioner" will make shorter, and yet more satisfactory, work of it, with Gray, or Allen, or some other anatomical treatise.

Another question of proportion occurs on turning to articles like those on *allyl*, a page and a half; *aloe*, *aloes* and *aloès*, four pages; *aluminium*, nearly two pages; *ammonium*, nearly eight pages; *amyl*, more than two pages; *antimoine*, *antimonium* and *antimony*, between five and six pages; but, most remarkable of all, *anemone*, about one page; *aristolochia*, more than two pages; *artemisia*, the same; and *astragalus*, almost entirely treating of the botanical genus, nearly two pages. Yet we find *angina pectoris* disposed of in less than a column, and *auscultation* in less than a quarter of a page. Under *asthma*, the descriptive part fills twenty lines; the remainder, a page, contains a catalogue of terms indicating the varieties of asthmatic affections, as they are named in different languages. No word is said, moreover, in this article, concerning the *treatment* of asthma. Surveying, then, the enormous accumulation of chemical, botanical and linguistic learning brought together in some of these articles, we cannot resist the temptation to paraphrase the famous saying about a scene upon the battlefield: "*C'est magnifique, mais ce n'est pas la médecine.*"

Several articles, on important subjects, have a good measure of cyclopædic fulness, with ample illustrations; as those on *amputation*, *apparatus*, *bacillus*, *bacterium*, *bandage*, *bone* and a few others. Yet the work is far from possessing the symmetrical completeness of a cyclopædia. It is, with some exceptional enlargements, a trilingual dictionary. As such, it has great value. But we cannot withhold the opinion that all the really important advantages of such a dictionary might have been obtained without passing much beyond the limits usual to such a work. With one-fourth of its present bulk, it would have been more convenient for use, and, because of its lower cost, it would have been available for a much larger circle of readers. As, however, there are many who need a work to meet its main purpose, we may hope that the stupendous labors of its preparation may not be without sufficient reward.

A few words may be said concerning Dr. Foster's system of orthography for medical words. In his preface he asserts a general regard for etymology in choosing between two ways of spelling the same word.

Thus, he prefers *thyreoid* to thyroid, *aneurysm* to aneurism, and *rhachitis* to rachitis. In these days of phonetic spelling reform, Volapük and World-English, brevity and simplicity are steadily gaining in the contest with etymological prepossession in orthography. We believe that lexicographers will do well to respect this tendency; not only because it is manifest in popular usage, but because it has in its favor the highest literary authority, and belongs to an inevitable movement of cosmopolitan progress.

H. H.

PTOMAINES AND LEUCOMAINES, OR THE PUTREFACTIVE AND PHYSIOLOGICAL ALKALOIDS. By VICTOR C. VAUGHAN, Ph.D., M.D., Professor of Hygiene and Physiological Chemistry in the University of Michigan, and Director of the Hygienic Laboratory; and FREDERICK G. NOVY, M.S., Instructor in Hygiene and Physiological Chemistry in the University of Michigan. 12mo. pp. 316. Philadelphia: Lea Brothers & Co., 1888.

THIS excellent work really fills a long-felt want and will be warmly welcomed by the scientific world, for in a short space it tells of the accumulated knowledge concerning the mysterious productions in organic matter. Scattered through chemical and physiological literature are accounts of the ptomaines and leucomaines, but this work is the first attempt to collect all the facts of value relating to them. Sir William Aiken, 1887, delivered a lecture at the Army Medical School at Netley on the Animal Alkaloids, which was subsequently published in a book of sixty pages; and Dr. A. M. Brown edited a translation of a work by MM. Gautier and Peter on the Ptomaines, Leucomaines and Microbes. These treatises, however, only review the subject in a partial way and but portions of the large field were gone over. The book now under review is the first comprehensive treatise, and carries the reader through the literature of the subject, and furnishes an exhaustive history of the chemistry and pathological bearings of the microorganisms and their results.

The importance of the subject may be appreciated when we learn that the study of bacteriology, now so interesting and valuable to the scientific world, is not complete without a knowledge of the results produced by the minute organisms, for, as has been stated by Vaughan, the small bodies seen under the microscope may be either the cause or effect of a disease, while the ptomaines produced by these organisms may be the factors responsible for a condition necessary to the life of one of the lesser organisms, while, on the other hand, the organisms may be products of the ptomaine.

The book convinces us that no person can grasp the full importance of the study of bacteriology without a knowledge of the chemistry of the ptomaines. If, for instance, we take the case of poisonous fish or meat; or find under the microscope certain bacteria, and if our investigation be continued no further, we may ascribe the poisonous effect to these bodies. But if the subject is followed more in detail we shall ascertain that a real poison, capable of being isolated and demonstrated by means of reagents, is present, and that the bacteria are either products of this poison or really subsist on it.

Without going more into detail, we would recommend the perusal of this important work. The authors have divided the topic into convenient branches, such as the ptomaines found in poisonous food, those that are the cause of effect of disease and those of interest to the toxicologist, as giving reactions identical with some of the vegetable poisons.

At the close of the book the authors give a complete and exhaustive bibliography of the subject, which will be a valuable aid to students and others investigating special branches of the study.

We congratulate the writers on their successful contribution to scientific literature, and would cordially commend the work as a readable and valuable treatise on an interesting topic.

W. K. N.

LECTURES TO PRACTITIONERS. I. ON THE DISEASES CLASSIFIED BY THE REGISTRAR-GENERAL AS TABES MESENTERICA. By W. T. GAIRDNER, M.D., LL.D. II. ON THE PATHOLOGY OF PHTHISIS PULMONALIS. By JOSEPH COATS, M.D. 8vo. pp. 285. With twenty-eight engravings on wood. London: Longmans, Green & Co., 1888.

THE lectures contained in this volume were delivered in the Western Infirmary, Glasgow, during the month of October, 1886. Owing to various circumstances, chiefly connected with the professional engagements of the authors, there was a delay of over a year in publishing them. This delay, the authors explain, has been of no detriment to the book, as it has permitted a fuller revision than would have otherwise been possible. In this view we fully concur, seeing that the interest and real value of the lectures lies not so much in the facts presented as in the way in which they are presented, and in the strong impress of the individuality of the author which each set of lectures bears. Whatever changes of view in regard to tuberculosis may occur in the course of the next ten years, whatever fact-obscuring fogs of traditional opinions may, by that time, have been swept away, these lectures will still be read with interest by students of pathology, if not for the truth of what is written, for the way in which it is said.

Yet the facts are all-important. If there is any way to a rational treatment of tuberculous diseases, to a certain prophylaxis against their spread, it lies through their pathology—a country well cleared of late but still abounding in obscure by-ways and misleading landmarks. The civilized world, medical and lay, is rather apathetic about consumption. It has gotten rid of the plague, and nearly rid of typhus epidemics; leprosy has been driven out of England, and smallpox has been made manageable, but one death in seven from all causes is still due to tuberculosis pulmonum, and some part of the remainder is due to other tuberculous diseases. If we feared these diseases as they merit, as we do the cholera or yellow fever, we would in time suffer less from their ravages. But we have strangely grown used to them and view them with a sort of fatalistic indifference, broken now and then by a ripple of interest awakened by the discovery of some new fetish, a wash bottle, or an air-tight box, or some other ingenious device, the impotent offspring of mechanical skill and ignorance of pathology.

Dr. Gairdner's lectures constitute a strong plea for the closer clinical study of the group of diseases designated in England by the term *tabes mesenterica*, and in France by the word *carrean*. The argument is ingenious, logical, telling; it is forcible in style, rich in matter, abundant in illustration; pleasant reading and wholesome teaching. Thus, page 37,

"I am not, therefore, in any way pretending to teach you anything new, when I say that the diagnosis of *tabes mesenterica*, or *carrean*, is inextricably mixed up with the signs of peritoneal rather than those of mesenteric glandular disease; and that it is even doubtful how far the latter enters at all into the diagnosis from physical signs as commonly observed. But I am, nevertheless, clearly of opinion that the precise observation and the just significance of those physical signs *in cases which are not fatal*, but which make, at all events, a temporary, and in some cases a permanent recovery, has not hitherto had sufficient attention bestowed on it, and the consequence of this has been that . . . the prognosis in these diseases inclines far too much to the grave and even hopeless aspect of them, and fails to recognize the existence of more or less similar cases which would tend to qualify that prognosis."

Dr. Gairdner holds also that the general prognosis in tuberculous and chronic peritonitis is more gloomy than the facts warrant.

We cannot commend too highly these terse, well worked out, practical studies in the pathology of pulmonary phthisis by Dr. Coats. They deserve the attention of the widest audiences of the medical profession, as a clear presentation of the more important facts upon which the doctrine of the infectious nature of pulmonary consumption rests. They are wholly interesting and instructive and, in parts, novel. Space forbids our reviewing them *in extenso*, a fact which will accrue to the gain of those who may be thus influenced to the task at once more pleasant and more profitable of reading them for themselves. J. C. W.

MEDICAL LECTURES AND ESSAYS. By GEORGE JOHNSON, M.D., F.R.C.P., F.R.S. London: J. & A. Churchill, 1887.

"I PROFESS both to learn and to teach anatomy," wrote Harvey, in the dedication of the treatise *De Motu Cordis et Sanguinis*, "not from books but from dissections; not from the positions of philosophers but from the fabric of nature." The learned author of *A Defence of Harvey*, the Harveian Oration of 1882, and the concluding essay of the volume before us, might well have made the same profession in regard to clinical medicine—both to learn and to teach, not from books but from patients, not from the positions of philosophers, but from the facts of disease. Everywhere, the patient is the text; on every page, the symptoms and signs, as determined by morbid changes in function and structure, the relation of pathological to normal anatomy, of pathology itself to physiology form the body of the discourse. Speculation is rare and held within the lines of the facts as the author has seen them; and he sees, for the most part, with clear vision. Not always as other men have seen; sometimes quite differently. The controversies are well known. The lenses of

to-day give not only larger amplification, but far better definition than those of a quarter of a century ago. But Dr. Johnson has seen, for the most part, we repeat, with singular clearness and accuracy. He is at once the pathologist and the clinician, but, above all, the practitioner. Herein lies the value of his writings; they are practical. His pathology is no mere curious research, nor with him is diagnosis only the exercise of much learning and great skill to solve obscure problems, nor therapeutics vain, or at most, an empirical art. He is not of that school. He is robust, earnest, hearty, believing. Not too much concerned with refinements, but vastly anxious to know what is really the matter, how it came about, and how to cure it. A very good kind of a doctor, of a type that will survive the overgrowth of specialism.

These lectures and essays are mostly reprints of papers that have appeared in various forms at different times during the last thirty years. Some portions are recently written; the rest have been carefully revised. They represent the author's latest and most matured opinions upon the subjects of which they treat, and especially upon such vexed questions as the pathology and treatment of cholera and of the various forms of Bright's disease of the kidneys, the relation of membranous croup to diphtheria, and the proximate cause of epileptiform convulsions. The topics are of the most varied kind, their presentation direct and simple, the style matter-of-fact, yet terse and dignified. The illustrative cases are numerous and valuable. Those whose "past is secure" will read these essays with interest; those whose professional life lies before them, with profit; we who stand midway will find in them both entertainment and instruction.

J. C. W.

THE PRINCIPLES OF CANCER AND TUMOR FORMATION. By W. ROGER WILLIAMS, F.R.C.S., Surgical Registrar to the Middlesex Hospital, Surgeon to the Western General Dispensary. London: John Bale & Sons, 1888.

THIS work is intended as an introduction to a contemplated treatise on the pathology and treatment of cancer and tumor formation, in six parts, and including the general and special pathology and treatment of the diseases named.

There are always difficulties in judging the whole from a part, and these seem unusually numerous in the present case. At the very outset we are compelled to stop and try to discover the meaning of the title. Believing, as we do, that the word "tumor" conveys only a negative idea, we hold that cancers furnish the very pattern and model of a "tumor." What our author understands, then, by "cancer and tumor" we fail to gather from this volume. Perhaps in the promised five we shall learn more. A large part of the work is taken up with some curious facts about vegetable neoplasms. The chapters on the development and etiology of animal neoplasms contain no definite advance in those lines.

Whatever may be the similarity between the formation of galls and that of tumors in general, cancer will probably be found to depart most widely from that mode. The adoption of His's histogenetic scheme,

which the author has advocated elsewhere, has much in its favor. We await, with considerable interest, the continuation of Mr. Williams's treatise.
G. D.

THE TRANSPORTATION OF THE DISABLED, WITH SPECIAL REFERENCE TO CONVEYANCE BY HUMAN BEARERS. By JAMES E. PILCHER, Assistant Surgeon, U. S. Army. 8vo. pp. 23. New York, 1888.

THE Ambulance Corps of the War of the Rebellion was eliminated in the reorganization of the Federal Army, but recently, after prolonged study of the needs of the service, the Medical Department of the army has formed a hospital corps which will number a thousand men, recruited by four "company bearers" from each battery, troop or company, who shall be especially instructed in carrying and giving first aid to the injured.

Finding the manuals on the subject deficient regarding the use of litters and also extemporized methods of carrying patients immediately after injury, Dr. Pilcher described, in a lecture before the Military Service Institution, in March last, methods which he had devised, and which he demonstrated by trained bearers. This lecture, in pamphlet form, with illustrations, forms a manual of the subject, clear, practical and ingenious, and the Department is to be congratulated upon having such an excellent *brochure* available for the instruction of the corps.

BEITRÄGE ZUR ANATOMIE DES SCHWANGEREN UND KREISSENDEN UTERUS.
By HOFMEIER and BENCKISER. Stuttgart: Ferdinand Enke, 1887.

CONTRIBUTIONS TO THE STUDY OF THE ANATOMY OF THE PREGNANT AND PARTURIENT UTERUS.

THIS is a series of sixteen *fac-simile* illustrations of sections made through various uteri, with explanatory text. The illustrations are highly satisfactory, and the text concise and clear.

The conclusion is reached (and, we think, demonstrated) that the uterus in all phases of its physiological and pathological activity consists of three portions: upper and lower segment, and cervix. The lower segment is that part of the uterine body which is between the internal os and the attachment of the peritoneum; this portion is very small in the non-pregnant uterus, but during pregnancy, labor, and the puerperal state possesses distinct anatomical and physiological characteristics; it is clearly distinguished from the cervix. The cervix remains unchanged until the end of pregnancy and continues to possess its characteristic mucous membrane, while the lower segment of the uterus is lined by decidua.

This work furnishes an illustration and amplification of the views of Professor Schröder, and originated in work done by him with the assistance of Hofmeier.
E. P. D.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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THE RELATION OF DRUGS TO THE SECRETION OF BILE.

As is well known, there is no therapeutic question in regard to which so much doubt and disagreement prevail as that relating to the action of drugs on the biliary secretion, or, as is commonly said, on the liver. Observers have so contradicted each other that one hardly knows where to look for truth. Perhaps the experiments of Rutherford have been most generally accepted. Recently PREVOST and BINET have published the results of most exhaustive inquiries into the subject, controlling and testing the results of all previous experimentation, particularly that of Rutherford. The experiments are given in exact detail, of much interest from a physiological point of view, and those interested may refer to the original articles (*Rev. méd. de la Suisse Rom.*, May, June and July, 1888). The method employed was to establish a permanent fistula from the gall-bladder, the track of which was opened from time to time for the experiments. The authors lay stress upon this, as they claim for the method advantages over the *canula* in the estimation both of the normal flow and that under medication. In confirmation of the statement of Röhmman, the infliction of the biliary fistula has been consistent with the preservation of good health in the animals, if only fat is withdrawn from the diet.

Bile itself, Prevost and Binet find to be the most powerful cholagogue, whether given in the natural state or in the form of a dry extract. If this be true, and it is only confirmatory of what many other observers have asserted, a good deal of doubt is thrown upon the conclusions of Rutherford, since he, believing the ingestion of bile to have no influence over the secretion of bile, actually used it as a vehicle for many of the drugs with which he was experimenting. Bile is also toxic in sufficient doses, subcutaneously, and will produce death, with symptoms of collapse. The intestine higher up is found,

post-mortem, full of bile; lower down, full of a diarrhœic matter, often bloody; sometimes the urine is bloody.

The following substances [Group I.] these observers have found to increase the flow of bile, viz., urea (in a single instance, c. accompanying severe gastro-intestinal trouble); oil of turpentine and terpine (on the supposed action of ol. terebinthin. on the biliary secretion is based the treatment of biliary lithiasis after the method of Durande. The present observers find that turpentine and its derivatives produce a "notable" increase in the secretion). Chlorate of potassium, which also has long possessed reputation as a cholagogue, increased the flow by once or twice the normal. Further, benzoate and salicylate of sodium (two or three times the normal), salol, euonymin and muscarin (subcut.).

Group II. Substances producing only a slight or doubtful and inconstant increase are, alkaline salts; carlsbad salts, propylamine, antipyrine, aloes, cathartic acid and rhubarb; *hydrastis canadensis*, *ipecac.* and *boldo*. Thus cathartics and the alkaline salts, which Rutherford considered cholagogue in non-cathartic doses, these observers found lacking in any such power.

Group III. Substances diminishing the secretion—iodide of potassium, calomel, iron and copper, atropine and strychnine. In regard to calomel, the writers have not been able to confirm Rutherford, who believed that what cholagogic action calomel had was owing to the transformation into corrosive sublimate. The last-named substance given by itself produced no increase.

Then follows another group of substances which are without action. In regard to the elimination of drugs through the bile, the conclusions of the observers are that it is unimportant, the quantities being so small. It is interesting to note that they found ox bile present in the bile of a dog which had taken it. There is no constancy between the elimination of a substance in the bile and the effect of the same on the activity of secretion. The subject appears to have been particularly well studied and the paper and its conclusions deserve attention.

THE STERILIZATION OF CATGUT.

PROF. REVERDIN, in Geneva, publishes in *Rev. méd. de la Suisse Rom.*, June, July and August, 1888, some conclusions he has made from a clinical and experimental study of catgut. His dissatisfaction with the quality usually furnished by the manufacturers led him to try sterilization by heat, and he found that crude catgut (which has not been treated by any fat to preserve it!) exposed for four hours to a dry heat gradually increased to a temperature of 284° F. (140° C.), then placed for a day in oil of juniper and kept in absolute alcohol, is quite aseptic. His clinical experiences with this catgut cover eighteen months and it has never failed him; while numbers of bacteriological tests have never shown any form of bacterium, though crude catgut and catgut exposed to oil of juniper and alcohol alone gave colonies, the first always, the latter often, showing that the dry heat is the essential factor.

THE PRESENT STATUS OF THE IODOFORM QUESTION.

The many papers on iodoform that have appeared the past year have been brought together by Freyer in *Ther. Monatshefte*, June and July, 1888 (see also

von Kahlden in *Centralblatt f. Bakteriolog.*, 1887, pp. 165 and 194, for a similar résumé). Røvsing, one of the Danish investigators who first condemned iodoform, has the latest word on the subject in *Fortschritte der med.*, August 1, 1888, and Neisser (*Virch Arch.*, B. 110, H. 2 and 3) is also one of the last to contribute to the discussion.

It would seem, from the great degree of unanimity among the observers, most of whom, it must be remembered, took up the subject with a prejudice in favor of iodoform, that it may be considered an established fact that iodoform is not an antiseptic—*i. e.*, is not a parasiticide, not a substance capable of disinfecting wounds and of hindering general infection. Nor does its everyday use imply that it is, for it is to be noted that all surgeons conduct an antiseptic operation and make the wound aseptic before applying iodoform. Two effects only are with justice placed to the credit of iodoform, viz., that of local anæsthesia and that of diminishing secretion from wounds. This second action several observers, including de Ruyter and Neisser, have considered explained by the destructive power of iodoform over the ptomaines generated by the cocci, and, further, that it avails to do this through the free iodine or iodine compound which, it seems demonstrated, is liberated in the wound. De Ruyter showed, in support of this theory, that iodoform rendered cadaverin, the best known ptomaine, inert. This, however, does not help the position of iodoform, as Røvsing points out, for even supposing that ptomaines played so important a rôle in surgical infection, hitherto all attempts to demonstrate ptomaines in connection with the commonest and most feared bacilli (of supuration, erysipelas, etc.), have failed, and in any case it would make of iodoform a substance which allowed the disease (*i. e.*, bacilli) to develop, before it began the attack, and came but late to the rescue from certain consequences, the institution of which it had been powerless to prevent. What this fact about ptomaines may explain, however, is the undoubted favorable action of iodoform in situations where putrefaction with the formation of stinking ptomaines is unavoidable—*i. e.*, in the rectum, mouth, nose, and in part in the vagina; but even here Røvsing finds an illustration of the central fact, viz., the impotence of iodoform against the bacteria themselves; he has seen repeatedly deaths from septicæmia in extirpation of the lower jaw and vaginal extirpation of the uterus, where iodoform had kept the wounds fresh in appearance and sweet.

BITUMINATED IODOFORM.

This new preparation of iodoform originated with EHRMAN, assistant in the clinic for syphilis, Vienna, who describes it and reports as to its use in the *Centralbl. f. gesmte. Ther.*, July, 1888, p. 385. It is a chemical product made by the impregnation of tar with iodoform; under the microscope the characteristic crystals of iodoform are no longer seen, but only hyaline plates. There is no trace of iodoform odor, but the preparation smells slightly, not unpleasantly, of tar. This may be covered by a very small quantity of styrax. Large quantities of water bring the iodoform odor out once more, so that in cases of wounds with abundant secretion there may not be entire absence of odor.

Ehrman has used this new preparation in twenty-two cases, especially of

chancroids and buboes, in each case alternating the iodoform for purposes of comparison. In general his cases healed remarkably quickly, but on this he lays no special stress as it may have been accidental, but it is worth mentioning that several cases did well under iod. bitum. that refused to heal under iodoform simp.

Three advantages it seems to have: 1. Absence of disagreeable odor; 2. It does not cause eczema and erythema, the occurrence of which often make it necessary to give up iodoform; and 3. It does not, as is often the case with iodoform, cause redundant granulation in the centre of an ulcer, while at the periphery the edges are undermined and pus is retained.

SOZOIODOLO.

This substance was introduced by Lassar last year (*Therap. Monatshefte*, 1887, p. 439). It forms a white powder, showing under the microscope flaky crystals, is made up of iodine (forty-two per cent.), phenol and sulphur, is easily soluble in water and alcohol and very stable in mixtures. Applied to a healthy skin it is well borne in powder and ointment, and is soothing to an inflamed and irritable integument. Lassar used it in five to ten per cent. powder and paste (c lanolin or c the oxide of zinc—starch vaseline base of Lassar's paste) and was well pleased with the results in acute and chronic eczemas, herpes, impetigo, inflamed skin, mycotic diseases and varicose ulcers.

Recently Fritsche has reported on its adaptability for throat and nose disease. There are in all four combinations of the substance with bases, viz., with sodium, potassium, zinc and mercury. The first two, of a bitter soapy taste and with an odor like lye, may be applied pure to the nasal mucous membrane, causing only a moderately strong burning and an increased secretion of mucus. The zinc compound must be reduced to a proportion one-fifth to one-tenth, and the mercury salt, which is very irritating, of one-tenth to one-twentieth. All were used as powders only. In atrophic catarrh, ozæna and pharyngitis sicca Fritsche had much better results than with other applications, the secretion being stimulated and the swelling of the mucous membrane, where present, diminished. Operative wounds in throat and nose healed much more quickly than usual. In all of his thirteen cases of tubercular ulcerations the ulcers cleaned and showed a tendency to cicatrize, but at the time of writing none had completely closed over. Fritsche's cases number altogether eighty-eight.—*Therap. Monatshefte*, June, 1888.

DEODORIZING OF IODOFORM.

Iodoform.	.	.	.	.	.	.	.	.	.	gr. xx.
Menthol.	.	.	.	.	.	.	.	.	.	gr. j.
Ol. lavand. puriss.	.	.	.	.	.	.	.	.	.	gtt. j.

One minim of an alcoholic solution of lavender in water is sufficient to keep hands and person from smelling, while the atomization of this solution will keep a superficial dressing from smelling of iodoform.—*L'Union Médicale*, 1888, No. 21.

EPHEDRIN MYDRIATIC.

The muriate of ephedrin, in ten per cent. solution, dilates the pupil forty to sixty minutes after instillation of one or two drops. The dilatation continues five to twenty hours. The accommodation is not paralyzed. From its cheapness, easy preparation and innocuousness the author believes it will displace homatropine.—*Schmidt's Jahrb.*, 1888, i. 21.

HYOSCINE.

BUDDEE, in his thesis (quoted in *Deutscher med. Wochenschrift*, May 17, 1888, p. 407), publishes the following results of trials: On the tremor of paralysis agitans, and tremor senilis and alcoholicus it works promptly—also procuring sleep in these cases—the influence on the tremor is not permanent however. A constant effect is a sense of fatigue. The habituation is quickly established so that the dose must be increased.

In the *Lancet*, June 30, 1888, p. 1311, results obtained by DR. FISCHER are quoted. He found it very successful in the treatment of mania and as a hypnotic in the dose of gr. $\frac{1}{125}$ to $\frac{1}{50}$ in distilled water, subcutaneously. Purely as a hypnotic Fischer discourages its use until other drugs have failed, because its depressing effect is felt by the whole system.

BRUCE (*Deutscher med. Zeitung*, March 8, p. 245) has found it most reliable as a brain sedative, especially valuable in delirium tremens.

SALGO, chief of insane asylum in Budapest, founds his opinion on several hundred trials (*Ther. Monatshefte*, June, 1888, p. 298) and declares its action in raving, excited patients extraordinarily successful—a sovereign remedy and far superior to all known sedatives as respects promptness, reliability and extent of application. Salgo gives a very exact description of the various steps of its action. In these cases, however, one may scarcely speak of a genuine, full sleep—the patients are always sleepy, one finds, and yet always awake. They may even take their food while under the influence of the hyoscin. Salgo's dose is gr. $\frac{1}{50}$ subcutaneously. From this dose he never saw any bad effects, either immediate or secondary.

PITCAIRN (*British Medical Journal*, July 14, 1888, p. 75) reports three cases selected as typical in which he used hyoscine. Case 1, one of delirium tremens, in a man of thirty-two, full of delusions, trying to escape, etc.; on third day, after all sedatives had been tried in vain, hyoscin gr. $\frac{1}{100}$ was injected. In ten minutes patient was drowsy, and in twenty the patient was in a sound sleep which lasted nineteen hours; and on awakening his delusions had vanished. Two other cases were of insomnia and mania, and hyoscine was equally successful after other drugs had failed. In the case of mania, hyoscine gr. $\frac{1}{150}$ brought about a sleep of thirteen hours, and gr. $\frac{1}{100}$ eleven hours. The general excitement on awakening was lessened. Thus he has found hyoscine most certain in its hypnotic action, but the dose must be increased, so that if a second dose is likely to be required it is best to commence with gr. $\frac{1}{150}$.

OBSERVATION ON PILOCARPINE.

PROF. MAGNUS (*Schmidt's Jahrb.*, 1888, iii. 236), in using pilocarpine as injection in eye cases, found that in two cases the drug entirely failed when

previously its action had been complete. No explanation could be suggested, but this accords with the frequent, disappointing failure of this alkaloid as a diaphoretic.

ANTIPYRINE IN POLYURIA.

HUCHARD reported to the Therapeutical Society of Paris (*Le Prog. méd.*, May 20th, 417) that in a case of diabetes insipidus long under observation, he had succeeded in reducing an amount of twenty-eight quarts to three by the use of gr. xxx-3jss of antipyrine; other drugs given as controls proved that the antipyrine was the effective agent. Again, a simple polyuria of ten quarts was reduced in five days to half that quantity. A diabetic passing eleven quarts, after 3jss of antipyrine per day passed only three quarts, and the amount of sugar was much reduced. In the discussion, Dujardin-Beaumetz said he had found its use very satisfactory in simple polyuria, giving gr. xxx per day, but in diabetes mellitus, though the amount of urine and sugar was reduced, albumin simultaneously appeared.

EICHHORST, (*Münch. med. Wochenschr.*, July 10, 1888, p. 478) saw no good results from antipyrine in diabetes mellitus, but in a case of diabetes insipidus an excretion of twenty-six pints was reduced to normal by gr. lxxv, and held there.

ANTIPYRINE TO SUPPRESS SECRETION OF MILK.

A writer in *Bull. gén. de Thérap.*, June 30, 1888, p. 554, claims to have suppressed the milk in full flow, and after other means had been tried in vain, by gr. viij of antipyrine, and that in three days' time.

LOCAL ANÆSTHETIC ACTION OF ANTIPYRINE SUBCUTANEOUSLY.

WOLFF (*Ther. Monhft.* June, 1888, p. 279) attributes to antipyrine a *local* action over pain equal if not surpassing that of morphia. In acute rheumatism, an injection in the neighborhood of the affected joint relieved the pain in three to five minutes, so that—*c. g.*, the patient could without pain raise an arm that was previously helpless. The chest pains of phthisis he saw relieved in five minutes and permanently, and the stabbing pains of pleurisy, etc., so assuaged in a few minutes that a satisfactory examination, previously interfered with by the shallow breathing, was made possible. In muscular rheumatism, in a large series of cases, the pain disappeared after a few minutes, either not to return at all or in a much more moderate degree. We believe that it would be useful for purposes of exact diagnosis in all painful examinations—*c. g.*, fresh fractures (*vide* August number); likewise in neuralgias of superficial nerves and in asthmatic attacks the results were extremely satisfactory.

In short, it is of the greatest possible use in all superficial, localized pains that one wishes to relieve quickly, for its action follows within five minutes, persists ten to twelve hours, and if then the pain returns, it is much modified. The solution is made of fifty per cent. strength in boiled distilled water and filtered several times. A syringe of gr. viij is given, but oftentimes one-half the quantity is sufficient. No bad effects from the antipyrin were observed, but locally the injection causes, in all cases, some burning pain, which is often intense.

SERIOUS RESULTS FROM USE OF PHENACETINE.

Given for migraine in a strong, healthy woman gr. xv caused vertigo and nausea; gr. xv again in three hours, chilly feelings and marked *cyanosis*, with sweating. Patient could not support herself unassisted. The headache remained unrelieved. The symptoms did not wholly pass off for twelve hours. —*Ther. Monat.*, June, 1888, p. 306.

ICHTHYOL.

NUSSBAUM, who has always made much of this substance, has lately praised its effect on neuralgias and osseous, articular and muscular parts. He uses pills containing one-sixth of a grain, two b. i. d., increasing rapidly to two, five times a day. Fischer uses externally in articular pains and psoriasis:

Ichthyol	.	.	.	.	.	.	.	.	.	.	1
Lanolin	9
In eczema:											
Ichthyol	10
Ungt. diachyl.	200

MEDICINE.

UNDER THE CHARGE OF

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THE FORMATION OF SUBCUTANEOUS NODULES IN ACUTE ARTICULAR RHEUMATISM.

LINDMANN (*Deutsch. med. Wochenschr.*, 1888, 519) reports two interesting cases, one in an adult, the other in a child, in which during the course of articular rheumatism numerous widespread nodules rapidly developed, with an increase of some of the rheumatic symptoms. The nodules were hard, somewhat painful, of the size of a pea or bean and movable under the skin, which was not reddened over them. As the patient recovered from the rheumatism the nodules disappeared. The author then makes a thorough review of the literature of the subject, and collects from it fifty-nine undoubted cases, of which most were females, and forty six were children. The development of chorea or of affection of the heart has often been observed simultaneously with that of the nodules. The latter usually appear suddenly in the later periods of the rheumatic affection, vary in size from that of a pin-head to that of an almond, may be symmetrically situated and persist from a few

days to several months, but usually about three weeks. The microscopical examinations which have been made show the nodules to be composed of newly formed connective tissue of an inflammatory type. It is possible that they are of embolic origin with the presence of microbes, analogous to the vegetations on the valvular leaflets. Their diagnosis should offer no difficulty. Rheumatic urticaria and circumscribed œdema are situated in the skin, and the nodules are in other respects quite different from these, as they are from the subclavicular pseudo-lipoma of Potain and Verneuil. They may most easily be confounded with gummata, which, however, become rapidly attached to the skin, grow larger, soften and often ulcerate; while the periosteal gummata soon assume a periosteal wall. The nodules have sometimes a diagnostic value, in that they may be the last sign of a slight and forgotten rheumatism. In such cases they give positive information concerning the nature of a chorea or an affection of the heart. Treatment is seldom required.

ABORTIVE TREATMENT OF WHOOPING-COUGH.

MOHN, of Christiania (quoted in *Centralblatt f. ges. Therap.*, July, 1888, p. 441), claims that whooping-cough may be aborted by disinfection of the room by burning sulphur. The patient is moved out, bathed and dressed in fresh clothes, and the room and all its contents, clothes of patient, etc., fumigated by sulphur for the space of six hours. After proper ventilation the patient is moved back, and lo! the whooping-cough is cured in an altogether miraculous fashion.

THE TREATMENT OF DIPHTHERIA WITH MENTHOL.

CHOLEWA (*Thérap. Monatshefte*, 1888, ii. 284) reports most favorable results from the application of plugs of cotton wet with a twenty per cent. oily solution of menthol to the nose in cases of nasal diphtheria. In cases in which syringing of the nose had been impossible on account of its being entirely filled with membrane, this method seemed rapidly to remove the membrane and to bring the diphtheritic process to a standstill.

ON PERFORATIONS IN THE SKULL IN EARLY CHILDHOOD.

HENOCH (*Berliner klin. Wochenschrift*, 1888, 581) contributes an article on this subject, and describes two cases. He has no reference to craniotabes, or to encephalo-meningocele from congenital defect; but to those forms of openings which are due to trauma occurring before or after birth, producing simply a depression, or a fracture, or both together. Depressions may be caused before or during birth by irregularities in, or narrowness of the pelvis, the use of the forceps, tetanic labor pains, etc. Trauma acting after birth commonly produces a fracture or fissure also. These results often follow falls on the head, whose occurrence the nurse has concealed. Hemorrhage over the seat of injury follows, and if the fissure is large enough to involve a tear of the dura and pia, a "spurious meningocele" is formed. When the injury is severe, the brain itself is involved, and encephalitis develops, which finally terminates in death. The author believes that at

least some of the many cases of death preceded by convulsions in young children soon after birth, and which appear inexplicable, would be found by autopsy to be the result of trauma applied to the head.

SULPHONAL IN INSOMNIA.

A. CRAMER (*Neurolog. Centralblatt*, 1888, 430) reports the results of 407 administrations of sulphonal to forty-five patients with various mental disorders. 30 times there was no result; 377 times sleep lasting five or more hours was produced, usually one-quarter to one hour after the medicine had been taken. The dose varied from one to three grammes. Unpleasant secondary effects were only observed in one instance, and consisted merely in some sleepiness on the following morning. The author then instituted experiments to determine whether the drug possessed any disturbing influence on the diastasic action of saliva, and on the power of artificially prepared gastric and pancreatic secretions to digest fibrin. The results showed such power to be absent.

RABBAS (*Berliner klin. Wochenschrift*, 1888, 330) has also obtained only good results with sulphonal in the insomnia of mental disorders. In doses of two to three grammes it acts better than either amyl hydrate or paraldehyde; and though sleep is produced by chloral more promptly, it does not last so long. He has found the remedy efficient in the worst maniacal conditions where chloral and paraldehyde had proved unavailing. Most of the twenty-seven cases to whom the medicament was given 220 times were instances of mania and melancholia.

PRIMITIVE PROGRESSIVE MYOPATHY OF THE FACIO-SCAPULO-HUMERAL TYPE.

Interesting in connection with the article of Gray, of which an abstract was published in the preceding number of the JOURNAL, is an instance of muscular atrophy of the infantile facial type of Landouzy and Déjérine, reported by SPILLMANN and HAUSHALTER (*Revue de Médecine*, 1888, viii. 451). At the age of ten years the patient began to suffer from atrophy of the orbicular muscle of the lips, then of the muscles of the face, at thirteen of the shoulder and arm, at eighteen of the forearm and thigh. The muscles of the calf and the flexors of the forearm were spared. The face was expressionless, immobile, with the eyes and lips protruding. The patient stood or walked with body bent far backward; the hands were held semi-flexed. The atrophy attacked the muscles from the outset without a period of hypertrophy; and in a portion from a muscle in which the process was far advanced, removed for microscopical examination, there was found to be simple atrophy without destruction of the striation or of the structure. There was no fibrillary contraction; the electrical contractility was quantitatively diminished in proportion to the degree of atrophy, but there was no reaction of degeneration. The plantar and patellar reflexes were abolished—a rare feature in this type of progressive muscular paralysis, though it may occur when the atrophy is extreme. Although there was wanting in this case one of the most important symptoms of the affection, namely, an inheritance of the disease, the authors

do not deem this sufficient reason to exclude so well marked an example from the class of myopathies belonging to the facio-scapulo-humeral (infantile facial) type.

DYSTROPHIA MUSCULARIS PROGRESSIVA.

ERB (*Münchener med. Wochenschr.*, 1888, xxxv. 443) says that in 1883 he proposed the division of "progressive muscular atrophy" into a spinal form (amyotrophia spinalis progressiva) and a form which was probably myopathic (dystrophia muscularis progressiva). In this last division he includes juvenile muscular atrophy (Erb), the pseudo-hypertrophy of children and the hereditary muscular atrophy (Leyden) and the infantile progressive muscular atrophy with involvement of the face (Duchenne). He maintains the clinical unity of the last four forms as regards, namely, localization of the hypertrophy and atrophy, the state of the muscles on inspection, palpation and electrical examination, the fibrillary twitchings, etc. A still stronger proof is the existence of transitional forms and the numerous cases in which different forms have been observed in the same family. Observations on portions of diseased muscle would indicate that the anatomical process is the same and that the first step is the hypertrophy of the muscle-fibres. There is found, besides this, all stages of transition to atrophy, the formation of vacuoles, fissuring, increase of the nuclei, growth of connective tissue and lipomatosis. The author reserves the discussion of the succession in the anatomical progress for another occasion.

THE TREATMENT OF DISEASES OF THE LUNG WITH THE DOUBLE SALTS OF CAFFEINE (SODIO-SALICYLATE OF CAFFEINE).

The well-known stimulating action of caffeine on the cardiac and respiratory centres has led YE GEMPT (*Berlin. klin. Wochenschr.*, 1888, 504, 527) to employ it largely in diseases of the lungs. The double salt is to be preferred on account of its greater solubility and the rapidity with which it is absorbed. 3 grains of the salt per day is seldom sufficient, while over $7\frac{1}{2}$ grains per day is not needed. The number of cases treated was forty. After discussing the subject fully and reporting some of the cases in detail, the author draws the following conclusions:

1. The use of the double salt of caffeine is indicated in the course of acute fibrinous pneumonia whenever observations on the activity of the heart and the pulse show a diminution in the strength of the heart, a fall of the arterial pressure or an abnormal frequency or an irregularity of the pulse; the continuance or increase of which symptoms becomes threatening to life.

2. The drug is to be made use of, when possible, before actual evidences of collapse appear; and if these are suddenly developed, the indication is so much the more urgent and the effect is still often good.

3. In conditions of weakness, valvular lesions, atrophy of the heart, likewise in drunkards and in old persons, its employment should be commenced in the beginning of the disease.

4. The action of proper doses consists in diminution of frequency of pulse and respiration, increase of arterial pressure, lowering of temperature and favorable action on the subjective sensations of the patient. The use of

stimulants is not excluded by the administration of caffeine. They are to be given under the known indications for them.

5. The action of the drug soon commences, but in threatening cases can be made still quicker and surer by means of subcutaneous injection of the remedy. After the fall of temperature caffeine is only to be given for a short time.

6. The same indications for the use of caffeine hold good in atelectatic or hypostatic conditions of the lungs.

7. The employment of the double salts of caffeine in emphysema or asthmatic conditions is indicated by the same signs as those for the use of the drug in diseases of the heart.

THE TREATMENT OF BRONCHO-PNEUMONIA IN CHILDREN BY THE APPLICATION OF ICE.

ANGEL MONEY (*Lancet*, 1888, i. 1071) praises the use of the ice-bag in broncho-pneumonia, having now employed it in many severe cases. To be successful the treatment must be carried out thoroughly and systematically; the rectal temperature being the best guide to the application of cold, and the cause of the broncho-pneumonia having no influence. When a rapid effect is desired, two ice-bags may be applied to the head, and one over the chief seat of consolidation in the lungs. This plan of treatment maintains the strength of the heart, the respiratory centres, and the nervous and muscular systems; and convalescence is rendered more rapid. The ice acts not merely by removing heat, but as a sedative. In this way it produces sleep, soothes the whole system of motor and sensory centres, and directly and indirectly quiets and steadies the heart and circulation. The beneficial effect upon the heat centre is well shown by the temperature chart; and a piece of ice applied to one part, especially the head, will produce cooling of the whole surface. Diarrhoea is not increased by the cold method, vomiting is often prevented, albuminuria is not rendered worse by it, and no cases of hæmaturia have been seen. The employment of cold does not obviate the necessity of stimulants, but renders them less necessary.

THE INHALATION OF HYDROFLUORIC ACID IN PULMONARY TUBERCULOSIS.

GAGER (*Deutsche med. Wochenschrift*, 1888, 594) reviews the literature of the subject, and the various trials, mostly favorable, which have been made of the drug in tuberculosis. He then details his experience with 17 cases treated in this manner. In 5 of these the tubercle bacilli disappeared from the sputum, and there was also decided improvement of the condition of the lung, as shown by physical exploration; in 7 there was more or less improvement in these physical signs; in 12 an increase of weight was noted; in 7 cases there was a gain of 100-600 c.cm. in vital capacity. Of 3 patients who had fever, one lost it entirely, and another partially. In one instance night-sweats ceased. In 5 cases there was no result. In no instance did the drug produce unpleasant effects, except in the patients with tuberculosis of the larynx, where it exercised a distinctly irritating action on the mucous membrane of that part.

CARDIAC DYSPNŒA.

FRAENKEL (*Berliner klin. Wochenschr.*, 1888, 289, 315), in an address on this subject, says that dyspnœa appears in very different forms in the different heart diseases, depending on the nature of the affection. It is sometimes premonitory, but is then slight and only occasional; and disregarding this, we may distinguish two forms of severe dyspnœa, the *continual* and the *asthmatic*. The first is especially well seen in stenosis of the mitral valve. This lesion is the least apt to attain complete compensation, and even when this occurs it is by hypertrophy of the right ventricle and necessarily with overfilling of the pulmonary system. The distended pulmonary capillaries project into and narrow the cavity of the alveoli, and this contraction of the alveolar space, together with the slowing of the blood current, and the lessening of the proportionate surface exposed to oxygenation, produces the continual dyspnœa. Digitalis in this lesion sometimes acts very badly, since by stimulating the right ventricle and sending more blood to the lungs it only increases the shortness of breath. Other cardiac affections also are accompanied by continual dyspnœa, as for example cases of progressive failure of the left ventricle with consequent engorgement of the pulmonary system; as is seen in the last stages of cases of "cardiac overstrain," or in heart diseases resulting from psychic depression.

Cardiac asthma, on the other hand, is seen most typically in hypertrophy of the left ventricle with abnormal resistance in the bloodvessels, resulting from arterio-sclerosis. The asthmatic attack comes quite suddenly and usually at night, waking the patient from sleep, and is generally very severe. The lungs are found full of coarse râles, and respiratory pauses may occur like those of Cheyne-Stokes respiration. The affection often resembles bronchial asthma greatly, but may be distinguished by the high tension of the vessels, the absence of expiratory dyspnœa, and often by the discovery of a dilated left ventricle, though this is not always easily detected, owing to an increase in the volume of the lungs. This enlargement is due to the fact that through the narrowing of the arteries the blood is driven into the venous system, or, rather, into the lungs and the left auricle. Hence there is a permanent engorgement of the pulmonary circulation, even when there is complete compensation. The sudden asthmatic attacks are probably due to a sudden temporary insufficiency of the left ventricle, brought about by psychic emotion, increasing catarrh, or some other cause. The heart is already doing its utmost, and this disturbance of the balance produces increased passive congestion and consequent dyspnœa. Autopsies have shown that the heart muscle is of normal structure, and it would, therefore, seem likely that the failure is due to paralysis of the cardiac nerves or ganglia. Fränkel cannot accept the theory of Basch, that cardiac dyspnœa is due to a rigidity of the lungs from their being overfilled with blood; this producing an insufficiency of the respiratory muscles.

Regarding the therapeutics, the author repeats what he has formerly said in praise of morphia and digitalis in combination. The former diminishes the arterial tension, prevents the exhaustion of the respiratory centre by the continued dyspnœa, and cuts short the asthmatic attack, while the latter stimulates the ventricle to greater activity. Calomel may also be employed

for its diuretic and purgative action, thus depleting the system; and though somewhat uncertain, it always benefits that patient to whom it has formerly done good. *Strophanthus* has been of no value in dyspnoea in the author's experience, except in those cases in which it produces free diuresis. As regards uræmic and dyspeptic asthma; the former is simply cardiac, and has nothing directly to do with uræmia. Cases of the latter have been reported by Hænoch, and seem to depend on the presence of undigested masses in the stomach; the affection being relieved by vomiting after lasting one or two days.

ON THE TREATMENT OF HABITUAL CONSTIPATION IN INFANTS.

EUSTACE SMITH (*Brit. Med. Journ.*, 1888, ii. 7) says that habitual constipation is very common in bottle-fed children and that even those at the breast are not exempt from it. The trouble may be due to a deficiency of sugar in the breast-milk, or to the presence of starch in the diet or to any food which burdens the alimentary canal with a large undigested residue. This sets up a slight catarrh, and the fecal masses, rendered slimy by the mucus, do not offer sufficient resistance to the muscular contractions of the intestine. Another cause is dryness of the stools, this being generally due to an insufficiency of fluid taken. In either case the colon grows accustomed to the presence of the fecal mass, and its expulsive power is soon impaired; while the pain attending the evacuation causes the child to delay it as long as possible, and the constipation is thus made more obstinate. It must be borne in mind that the administration of opium by ignorant parents or unscrupulous nurses is sometimes at the root of the trouble. Constipation may not at all interfere with the general health, or it may produce loss of appetite, colic and violent straining efforts.

When the infant is at the breast a teaspoonful of syrup, three or four times a day, will often quickly restore the regularity of the bowels. If the stools are habitually dry and hard and the urine scanty, it is an indication for the supply of more fluid; and a dessertspoonful of some saline mineral water given at night aids the return of the stools to their natural consistence. The form of constipation due to intestinal catarrh may often be remedied by lessening or removing the starchy matters from the food. Mellin's food is useful in such cases, particularly if barley water be added to the milk to prevent the formation of a dense curd in the stomach. Benger's "self-digesting food" is also useful and does not need the barley water, as the pancreatin digests the curd. When the child has reached the age of ten months, a little veal-broth or beef-tea is advantageous, or a little well-boiled asparagus or broccoli, or a teaspoonful of fine oatmeal to thicken the milk. In other cases the catarrh is due to chilling of the body from insufficient clothing; and the remedy is to swathe the belly in flannel and to leave no inch of the surface of the body uncovered. Frictions of the abdomen following the course of the colon are to be recommended.

A suppository of castile soap, the injection of forty to sixty drops of glycerin or of half a pint of soap and water will produce an evacuation, but is by no means curative. To produce a permanent cure such remedies must be used as regulate the bowels without purging. For this purpose we may employ a mixture of tincture of *nux vomica* and tincture of *belladonna*, with

the infusions of senna and calumba; or one of the fluid extract of cascara with tincture of belladonna. Half a grain of sulphur every night is a useful plan of treatment. When the motions are drier than natural, a valuable prescription for a baby of six months old is: Sulphate of soda, 5-10 grains; sulphate of quinine, $\frac{1}{4}$ grain; tincture of nux vomica, $\frac{1}{2}$ drop; aromatic sulphuric acid, 1 minim; in a teaspoonful of water three times a day before food. This draught does not teach the bowel to depend upon it, but to act spontaneously, so that the frequency of administration can be diminished and the medicine finally discontinued.

THE DIAGNOSIS OF ABDOMINAL TUMORS.

For two years O. MINKOWSKI (*Berlin. klin. Wochenschr.*, 1888, 617) has been devoting his attention to the diagnosis of abdominal tumors chiefly by observing the changes in position which they undergo, if, on the one hand, the stomach be distended with carbonic acid gas, or, on the other hand, the large intestine be filled with water. The position of the tumor is first determined accurately, the stomach being as empty as possible; carbonate of soda is then administered to the patient and followed by tartaric acid, and the stomach in this way distended with gas. The position of the tumor is then again accurately mapped out. The gas is then removed by the stomach tube, the large intestine filled with water by injection—which is to be preferred to its distention with gas—and the tumor again outlined. The author has examined 110 abdominal tumors in this way, and has found that, on thus distending the stomach or intestine the growth tended to move toward the region which the organ would occupy under normal conditions. 1. Tumors of the liver move upward and to the right when the stomach is distended with gas. On filling the intestine the growth moves upward simply; sometimes slightly to the right or left. 2. Tumors of the gall-bladder follow much the same rule as applies to those of the liver. 3. Tumors of the spleen move to the left and often slightly downward on distending the stomach. On distention of the colon they move upward and usually to the left. Movable tumors of the spleen, which have left the normal position, tend to resume it when the stomach, and especially the intestine, is dilated, and to produce again the splenic dulness which had been absent. The filling of the stomach with gas is a very valuable means of distinguishing between an enlarged left lobe of the liver and an enlarged spleen. 4. Tumors of the stomach can often be recognized at once when the stomach is inflated. In other cases the fact that the growth becomes broader, the boundaries more indistinct, the percussion sound more tympanitic and isolated nodules more widely separated from each other indicates that the growth belongs to the stomach. Circumscribed tumors in the region of the pylorus usually move to the right and downward. Tumors of the transverse colon and of the omentum also often exhibit the same change of position when the stomach is inflated, but in many cases the growths of the stomach can be distinguished by the fact that they move in an upward direction when the colon is filled with water. Growths of the lesser curvature usually move upward and disappear backward when either the stomach or colon is distended; but they are subject to other changes of position. 5. Tumors of the colon are often easily recognized, becoming broader when the intestine is filled with water. Tumors of the transverse

colon move upward on inflation of the stomach, but downward on distention of the colon. It is to be noted, however, that growths of the intestine often offer the greatest difficulty in their recognition. 6. Tumors of the omentum are displaced downward by inflation of the stomach, and downward and strongly forward by the filling of the intestines. 7. Tumors of the kidney are not materially affected by inflation of the stomach, but move upward on distention of the colon, are felt with difficulty, and then almost always disappear. If the abdominal walls are flaccid, the intestine filled with water can often be quite easily traced in its course over the tumor. If the kidney is not in its normal position, as is so often the case, the injection of water into the intestine will usually push it into its proper place. Very large renal tumors do not entirely disappear in this way, but are very distinctly pressed outward and backward. 8. In a case of tumor of the pancreas the growth acted much as did those of the kidney, except that on distention of the stomach there was a slight displacement toward the right. 9. Tumors of the ovary are moved by the full intestine forward, a little upward and to the side to which the diseased ovary belongs.

The author recommends that in the investigation of abdominal tumors the inspection of the patient from behind be not neglected. Tumors of the liver or spleen will show a prominence at the lower part of the thorax, and those of the kidney, if of considerable size, at the middle of the lumbar region. Not seldom, however, in the case of growth of the kidney, there will be a depression or diminished resistance of the soft parts in this region. In such cases an evident projection will appear here, when the colon is filled with water. This is one of the most constant symptoms of movable kidney, or of movable renal tumors. Trousseau's method of bimanual palpation may be with advantage applied to the examination of tumors of the liver, spleen and intestine, as well as of the kidney. In many cases, in which a tumor of the kidney cannot be detected in this way, the growth may be felt after the colon has been distended with water and the kidney restored to its normal position. As is well known, the recognition of tumors by their displacement by respiration is often disappointing, since growths of all the abdominal viscera may sometimes move when the patient breathes. In such cases a decision may be reached by fixing the tumor from outside during inspiration. If it is a tumor of the liver, or one adherent to this organ, the expiratory movement upward cannot be thus prevented.

SURGERY.

UNDER THE CHARGE OF

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INTESTINO-PERITONEAL SEPTICÆMIA.

Under this name VERCHERE (*Revue de Chirurgie*, No. 7, 1888) describes, in an exceedingly able article, an affection either not mentioned by surgical writers or classed as a latent peritonitis.

All lesions of the abdomen, accidental, surgical, with or without injury to viscera, may exhibit the typical symptoms of the condition. These symptoms are: an exceedingly rapid and marked meteorism, a profound alteration in the expression, absence of tenderness on pressure, more or less retention of gas and fecal matter, a normal or subnormal temperature during the entire course of the affection till shortly before death, when the thermometer shows a sudden increase of temperature to 103° – 104° . The pulse is small and very frequent. There is vomiting, usually bilious, at times, stercoraceous. Nausea and regurgitation almost from the beginning. Anorexia absolute. Thirst intense.

The autopsy shows none of the lesions belonging to peritonitis. There is an active congestion of the peritoneum. Sometimes a small quantity of brownish fetid effusion, sometimes gas. The intestinal distention is considerable. Putrefaction is very rapid. The affection runs its course in eight, ten, or twelve days. Sometimes for the first three or four days the abdominal facies, meteorism and constipation will be the only symptoms, then all the grave phenomena quickly appear, and death follows shortly.

These identical symptoms are characteristic of all forms of intestinal occlusion, strangulated hernia or internal strangulation. Similar symptoms are dependent on similar causes. The cause in the so-called latent peritonitis is referable to pseudo-strangulation. At first the phenomena of peritonism (reflex paralysis) develop; then a mechanical occlusion by flexure of the inflated intestine, from which follows absorption of the septic intestinal contents and intestino-peritoneal septicæmia.

The diagnosis is evident in the majority of cases, and it is necessary to differentiate this distinct morbid process from peritonitis with which it has always been confounded. The therapeutic indications depend naturally upon the primitive cause.

GASTROENTEROSTOMY.

Two successful cases of gastroenterostomy are reported by FRITSCHÉ (*Correspondenz-Blatt für Schweizer Aerzte*, No. 15, 1888). These, together with Lücke's eight successful cases, considerably reduce the mortality of this operation. Gastroenterostomy is indicated in cicatricial or malignant pyloric obstruction. In the one case it promises a speedy cure with the minimum of danger, in the other, a complete subsidence of all painful symptoms, and months of enjoyable life. One of Lücke's cases survived the operation for more than a year.

Fritsche operated after Wölfler's method. Preparatory nutrient enemata and washing out of the stomach, followed by a one-half per cent. salicylic acid lavage. Median incision, four inches in length, from the ensiform cartilage, downward. A loop from the upper portion of the jejunum, sufficiently free in its attachment to be brought in apposition with the anterior wall of the stomach, was selected. A portion, about a foot and a half from the termination of the duodenum, was chosen for the opening, and loosely tied off from the remaining gut by two pieces of disinfected cotton bandage passed through a non-vascular part of the mesentery. A portion of the anterior stomach wall was compressed between two iron rods protected by rubber tubes, and held together by elastic bands passed about their ends. The incision was two

inches in length, and was made first into the bowel; its upper borders were sutured to the peritoneal coat of the stomach, after which the latter was opened and secured to the bowel by a continuous mucous membrane suture, a continuous Czerny suture, including the muscular and serous coats, finally, a continuous Lembert suture. A portion of the bowel proximal to the fistula was secured to the stomach wall by a few threads. The abdominal wound was closed by a continuous peritoneal suture, a muscle and fascia suture, finally, a skin suture. Of the two cases treated, one suffered from pyloric cancer, the other from stricture in the same region. In the after-treatment, the only complication was due to yielding of the catgut parietal sutures.

Excepting cases of pyloric cancer which have contracted no adhesions, are limited in extent, and have not involved the glands, gastroenterostomy is always to be preferred to pylorotomy. The choice of this operation in cicatricial contraction rests upon the fact that its mortality in these cases is 14.3 per cent. against 57 per cent. for pylorotomy.

The secondary dangers of gastroenterostomy are, spur formation which may completely obstruct the fistula, and compression of the colon by the mesentery of the bowel containing the fistulous opening. Death has followed from both of these sequelæ, with symptoms of ileus.

THE SURGICAL TREATMENT OF ULCERATIVE PERFORATION OF THE STOMACH AND BOWELS.

STEINTHAL (*Beilage zum Centralblatt für Chirurg.*, 1888, No. 24) reports three cases of ulcerative peritonitis operated on by Czerny unsuccessfully.

Case I.—Servant, aged twenty. Frequently a sufferer from pains in the stomach. Five days before operation pain suddenly developed in the left side. The following day abdominal swelling and dyspnoea. Since then great constitutional disturbance, no stools, no vomiting; on examination, belly swollen, tender and tympanitic, no liver dulness, some impairment of resonance in the lumbar region.

Operation. Incision in the middle line; on opening the peritoneum escape of a quantity of odorless gas. Peritonitis slight. Perforation could not be found. Death in four days.

Autopsy showed a perforation of the anterior wall of the stomach.

Case II.—Waiter, aged thirty-three. A chronic sufferer from pains in the stomach. Three days before operation, after a sudden movement, pain was immediately felt a hand's breadth to the right of the navel, with the sensation of something having given way. Continued vomiting since. Neither gas nor feces by the rectum. Belly greatly swollen, especially in the epigastric and hypogastric regions. Tenderness over the whole abdominal region, but most marked on the right side. Some percussion dulness in lumbar region, extending a hand's breadth above Poupart's ligament to the middle line. Resonance over the liver.

Operation. Incision in the middle line. Offensive gas discharged on opening the peritoneal cavity. Dull percussion sound over Poupart's ligament, explained by a pericæcal abscess. Perforation found at the pyloric orifice of the stomach. Sutured. Death the same night.

Autopsy. Diffuse fibrinous peritonitis; ulcerative perforation by a chronic ulcer of the stomach, with circumscribed peritonitis.

Case III.—Man, aged fifty-two. Woke in the morning with pain in the cæcal region. Rest in bed, ice-bladder, liquid diet following. On the second day after, sudden and violent pain in the ilio-cæcal region, collapse. Swelling of the belly, gradually diminishing percussion dulness of the left lobe of the liver. Swelling and resistance in the ilio-cæcal region, with a circumscribed percussion dulness somewhat larger than a silver dollar.

Operation. Incision in the ilio-cæcal region. No escape of gas. Resection of a perforated necrotic vermiform appendix. Symptoms all favorable till the fifth day, when restlessness, swelling, nausea, vomiting and collapse appeared. Death the next day.

Autopsy. No general peritonitis. Intestines greatly distended.

Of eighteen cases operated on for ulcerative perforation, eight were cured. In five of these eight there was a circumscribed sacculated peritonitis, which was incised and treated as an abscess, with suture of the bowel in one case, and resection of a necrotic vermiform process in another. In the remaining three cases, in addition to the perforation, there was diffuse suppurative peritonitis.

An early diagnosis is a most important element in the prognosis.

In addition to the history, sudden development of peritonitis, with universal tympany, indicates a perforation. If there is rapid development of tympany, with disappearance of the liver dulness, and, on opening the cavity, odorless gas escapes, the perforation is probably in the stomach. Perforation of the ilium or colon is characterized by foul, septic gas. In perforation of the jejunum there is slow escape of contents and gradual development of symptoms.

In these operations the peritoneal cavity should be irrigated by one-sixth per cent. salicylic solution till it comes away clear. The most extensively infected portion of the bowel is treated with bichloride solution. Lowenstein believes that a thorough purification of the peritoneal cavity after perforation is impossible and dangerous. According to Frank, Hahn has operated twice for typhoid ulcerative perforation; both cases were unsuccessful.

Wagner reports an operation in the case of a man who had ruptured a duodenal ulcer by lifting a weight. The diagnosis of intra-peritoneal rupture of the bladder was made. The seat of perforation was found at the autopsy.

RADICAL OPERATION FOR REDUCIBLE HERNIA.

COHN (*Berlin. klin. Wochenschr.*, No. 32, 1888), reports 51 cases of reducible hernia, for the cure of which a radical operation was undertaken. Of this number 41 were inguinal, 9 crural, 1 umbilical. The operation consisted in closing the hernial opening by a double catgut ligature, after which the sac was extirpated. Certain difficult and advanced cases required the insertion of additional sutures, the approximation of the columns of the ring, etc. In most of the cases the wound was closed by a catgut suture and rubber or glass drainage tubes inserted. Under certain conditions the wound was packed, and subsequently closed by secondary suture. In women and children satura-

tion of the dressings by urine cannot always be avoided, the tamponade is especially to be commended when this is liable to occur, not because it absolutely prevents septic infection but because it allows of immediate treatment and purification.

Since primary union is frequently prevented by a certain amount of connective tissue-destruction, and since consecutive bleeding is by no means rare, there would seem to be, in these cases, special indications for tamponade and secondary suture. Though the wound is longer in healing, the cicatrix is larger and more dense. The results were most satisfactory in the cases treated by this method. Large pieces of iodoform gauze were used.

If no fever is developed, the packing is removed in six days, and unless there are necrotic shreds of connective-tissue, the wound is closed by a silk suture. A thin layer of gauze, the end of which projects from the lower angle of the wound, provides for drainage; this is usually removed at the next dressing (eighth day). When necrotic tissue is slow in coming away the wound is not sutured, but allowed to close by granulation. The sutures can be inserted and loosely knotted at the first operation, to be tightened when the packing is taken away. After cicatrization the patient wears a truss.

The only contraindication to the operation is an incurable intercurrent disease, such as carcinoma or advanced phthisis. Extremes of age or immense hernial bulk should not weigh against an effort to secure a radical cure. The danger is so slight that every patient suffering from hernia should be advised to submit to an operation.

As to the permanency of the cure, but five cases were investigated. Three of these have not suffered from a return of the protrusion. In the first case a year has passed since the operation, in the second and third cases but a few months. Of the forty-eight patients treated, but one perished as a direct consequence of the operation; in this case acute septicæmia developed.

STERILITY IN MEN.

FÜRBRINGER (*Deutsch. medicin. Wochens.*, No. 28) classes the conditions which exist in sterile men under two headings. There may be absence of spermatozoa or absence of seminal discharge. Absence of spermatozoa is the most frequent cause of sterility among men. This condition is rarely suspected since coition may be complete, and accompanied by an abundant seminal discharge. After an extended clinical investigation Fürbringer concludes that in all cases of procreative impotence there is permanent azoospermia, and that the cause of this absence of spermatozoa in the semen is (with few exceptions) an obliteration of the seminal duct due to a double gonorrhœal epididymitis or funiculitis. Since Kehrler found, in forty cases of matrimonial sterility, that the cause lay with the man in fourteen, since coition and ejaculation on his part are, by himself and by the physician, taken as evidence of his competency, and consequently fruitful women are subject to tedious cures and gynecological operations, Fürbringer strongly insists on the most careful examination of the husband, and on the microscopic investigation of his ejaculation in all such cases. The prognosis is absolutely bad in cases which have lasted longer than three months. In aspermia there is no ejaculation. The permanent form is caused either

by a displacement of the ejaculatory duct by which the secretion is carried toward the bladder, or by a well-marked stricture of the urethra. In the latter case an erection may make a stricture entirely impermeable which, under ordinary circumstances, allows of the passage of a moderately full stream.

Fürbringer observes that the prostatic secretion is the source of the strong seminal odor, the secretion of the testicle being absolutely odorless. The statement is made that the spermatozoa show motion only when mingled with the prostatic fluid.

CHOLECYSTENTEROSTOMY.

Cholecystenterostomy, proposed by Nussbaum, but first successfully performed by Kappeler, has again succeeded in the hands of SOCIN (*Correspondenzblatt für Schweizer Ärzte* 15, 88).

The patient, æt. fifty-one, had been seized with abdominal pains eleven weeks before the operation, and had shortly become jaundiced. Pain only during digestion. Loss of strength and weight rapidly progressive. On examination marked bronzing of skin and mucous membranes, dryness of the surface, advanced emaciation. The liver extended downward to within a third of an inch of the anterior superior spinous process of the ileum. Beneath its edge was felt a rounded, smooth, fluctuating, slightly tender swelling, the size of a man's fist, movable laterally. Urine contains bile; the stools showed no sign of its presence. Temperature subfebrile. Weight ninety pounds. Obstruction to ductus communis choledochus was diagnosed.

Operation: Free incision along the border of the rectus. The peritoneal cavity was opened, the gall-bladder readily drawn forward, opened, and a pint of gall evacuated. Since neither gall-stone nor any other obstruction was found, a cholecystenterostomy was determined upon. The jejunum was drawn out, an incision an inch and a quarter long made in it, and this opening sewed to that in the gall-bladder. Passage, containing bile, in three days, disappearance of icterus, and in a month a gain of nine pounds.

THE DIAGNOSTIC SIGNIFICANCE OF A TONGUE-LIKE EXTENSION OF THE RIGHT LOBE OF THE LIVER, IN DISEASES OF THE GALL-BLADDER.

RIEDEL (*Berliner klin. Wochenschr.*, No. 29) describes a tongue-like projection of the right lobe of the liver, extending downward, which is sufficiently frequent to be an important aid in the diagnosis of certain obscure inflammatory affections of the gall-bladder. By palpation it can readily be felt as a smooth resisting body, continuous with the liver, moving in respiration, and frequently extending below the level of the umbilicus. The percussion note may be resonant, showing that the depth of the out-growth is not great. In six, of ten cases, the extension was most marked, and in two cases constituted the main diagnostic point.

As to the value of this sign, in itself it is not to be depended upon as indicating involvement of the gall-bladder, since it is found in other inflammatory enlargements which become attached to the liver by circumscribed adhesions (cystonephrosis) or may develop independently of inflammation from constriction (corset liver).

If, however, there is found beneath this outgrowth an area which is painful, or is tender on pressure, if there is a history of hepatic colic, or of severe attacks of vomiting, this peculiar extension of the liver is a confirmatory sign of great significance.

Of the ten cases operated on for inflammation of the gall-bladder, seven are entirely healed, one is in process of healing, and two are left with fistulæ. The discharge in these two cases is very slight.

Suturing of the gall-bladder in the abdominal wound, and subsequently opening it, is commended as an entirely safe operation.

Riedel's technique is as follows:

For two days attention is paid to clearing the bowels. Immediately before the operation a morphia injection is given to make the anæsthetization as quiet and complete as possible. The incision is made over the swelling, through the rectus muscle, if possible, separating its fasciculi. It should be small, an inch and a half to two inches in length. After division of the transversalis fascia and the peritoneum the gall-bladder is seen covered by omentum which must be pushed aside. After exploration, by means of the finger thrust into the peritoneal cavity, an oval surface of the gall-bladder, three-fourths of an inch long by one-fourth in breadth, is united to the peritoneum by six or eight catgut sutures threaded in round needles without edged points. These sutures are passed only through the outer coat of the gall-bladder; this is easy as the walls are much thickened by inflammatory action. In the middle of the oval a silk thread is inserted. This is most important as, after six or eight days, the whole wound is covered with a mass of granulations, and, without some certain guide, opening the gall bladder might be exceedingly difficult. The wound should not be wedge-shaped at the time of secondary incision but should be, at its deepest part, as broad and long as at the surface, and should expose the entire oval. To accomplish this, small dossils of recently sterilized gauze are packed around the central silk thread to the very bottom of the wound. These dossils are removed in eight days, when an incision, three quarters of an inch long, is made where the silk thread is attached. The incision is gradually deepened, the edges of the wound being held apart by hooks, till the knife enters the gall-bladder. An exploration is now made by the finger, large stones are crushed and removed by a spoon, smaller stones are washed out. The dressing must be changed frequently, at first, as there is usually a profuse flow of gall. The skin about the drainage tube is protected by ointments. In three or four weeks the discharge diminishes. In five or six weeks the drainage tube is taken out. The cicatricial tissue quickly contracts, and the patient requires no dressing. From the fact that there is rarely any immediate urgency in cholecystotomy, that the secondary incision requires the minimum exposure of the peritoneal cavity, and is completed in a few minutes, this double operation is advised in all cases of cholelithiasis and inflammation, except in cicatricial obstruction of the cystic duct, or in case of stone so firmly secured in a diverticulum or in the cystic duct that it cannot be dislodged, when cholecystectomy is indicated.

SUTURE OF AN OLD PATELLAR FRACTURE.

SONNENRUBG (*Beilage zum Centralblatt für Chirurg.*, No. 24, 1888) records the case of a patient, who, in 1884, fractured his patella and recovered with

ligamentous union. In 1887 the ligamentous band was torn and the fragments widely separated. As there was no chance for spontaneous union and the quadriceps was somewhat atrophic, Sonnenburg determined upon approximation and suturing of the fragments after v. Bergmann's method. The tuberosity of the tibia was chiselled off to allow the lower fragment to be approximated to the upper; in spite of this, it was very difficult to suture the two fragments closely to each other. The case terminated favorably. Bony union took place, the quadriceps became again functionally active, the patient could extend his leg and flex it to a right angle. Sonnenburg considers this the best method by which widely separated fragments can be approximated, but cautions the surgeon against involving the joint in the separation of the tuberosity.

THE CHECKING OF HEMORRHAGE IN AMPUTATIONS OF THE SHOULDER-JOINT.

In case of traumatic or inflammatory affections calling for shoulder-joint amputations, W. KOCH (*Archiv für klinisch Chirurg.*, xxxvii. Bd., Heft 2) holds that the management of hemorrhage is attended with little difficulty. Bleeding is insignificant, even though circular compression and pressure upon the subclavian be omitted, if the operator proceeds in the ordinary method—i. e., a vertical incision running down from the coracoid process, disarticulation, seizure of the axillary artery by the fingers of an assistant, and completion of the flaps by a circular cut. If the operator prefers, a preliminary ligation of the third part of the axillary may be performed.

In the profound anæmia always attendant upon malignant sarcoma of the arm or shoulder, whether the tumor be ulcerating or not, the loss of a relatively small quantity of blood becomes a very serious matter, and the hemorrhage, even after a preliminary ligation of the axillary or subclavian is extraordinarily profuse.

In these cases Koch advises that the clavicle be divided at the inner border of its outer third and, after a preliminary bandaging of the arm, a strong rubber tube be passed beneath the axilla, around the shoulder and through this break in the continuity of the bone. Before knotting, four loops should be affixed, corresponding to the position of the pectoralis, latissimus dorsi, clavicle and spine of the scapula. The rubber tube is drawn tight and tied, and to prevent it from slipping when the arm is taken away the loops are pulled by two assistants toward the sound side of the body. By this means not only the subclavian but also the vessels which supply the collateral circulation are firmly compressed.

THE TREATMENT OF FRACTURES OF THE ELBOW-JOINT.

LAUENSTEIN (*Beilag. zum Centralblatt für Chirurg.*, No. 24, 1888) advises for supra-condyloid, condyloid or T-fractures of the lower extremity of the humerus, treatment in the extended position, on the ground that displacement of the condyles cannot be detected when these fractures are treated upon the ordinary right-angled splint, but will, when union is complete, leave the patient with an axis deformity, on extension, corresponding to varus and valgus, as the inner or outer condyle is displaced. Since ankylosis is frequently due to

an over-production of callus, this accident is favored by a position which will not allow the surgeon to determine certainly whether or not the bones are in proper position. Lauenstein has treated all of his cases for the last six years in the extended position, and has had excellent results.

König, while commending the extended position in hospital practice, holds that the angular splint is more practical for private and dispensary patients.

Bardenheuer has for five years treated all elbow fractures with permanent extension, both longitudinal and transverse, and with satisfactory results.

Wagner and Sonnenburg, while admitting the value of this method, claim that some cases do better when treated in the right-angled position.

MASSAGE TREATMENT OF CHRONIC LEG ULCERS.

APPENRODT (*Deutsch. medicin. Wochenschr.*) commends massage as a means of treating chronic, indurated, eczematous leg ulcers which have resisted all other treatment, claiming the rapid appearance of healthy granulations and prompt cicatrization as the certain sequence of perseverance in this method.

The ulcer and the entire limb must first be thoroughly disinfected by a course of antiseptic dressings and washings, lasting for several days; otherwise septic matter may be forced along the lymphatic channels and multiple abscesses complicate the case.

Light effleurage is first employed carefully, avoiding strong pressure. Lanolin is used as the inunction. After massage, the limb is again thoroughly washed with soap and disinfected; all raw surfaces are dressed with mull spread with lanolin, covered with tissue paper, and a roller bandage applied over the whole.

DERMATOLOGY.

UNDER THE CHARGE OF

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PEMPHIGUS PRURIGINOSUS—CURE BY CARBOLIC ACID.

The notes of a case of pemphigus pruriginosus treated successfully by applications of carbolized water are given (*Revue Médicale*, No. 4, 1888) by SECRETAN. The patient, an adult male, exhibited upon all parts variously sized blebs in the several stages of development. The lesions covered, in all, more than half the surface. The eruption appeared in outbreaks, accompanied by elevation of temperature. As soon as one crop had about disappeared, a recurrence would take place. The patient was greatly enfeebled, both by the direct draining effect of the disease, as well as by the intense

and persistent itching. The ordinary therapeutic methods were tried in vain, and, finally, as a palliative to the pruritus, compresses wet with carbolized water (one per cent.) were applied, with almost instant relief to the itching, and with gradual improvement in all the cutaneous symptoms. The new blebs were abortive, and in four or five weeks after these applications had been ordered, the patient was discharged from the hospital cured. In the beginning of this treatment, especially when there were numerous excoriations, it was necessary to discontinue the applications, for hours or days, by reason of evidences of toxic influence. In all, the case was under treatment, from admission to discharge, from the middle of January to the last of March. The disease had made its appearance early in the preceding December. The author suggests that the therapeutic result of the carbolic acid applications agrees with the microbe theory of the disease advanced by Gibier.

PEMPHIGOID ERUPTION, WITH CHANGES IN THE PERIPHERAL NERVES.

SANGSTER and MOTT read before the Royal Medical and Chirurgical Society (*British Medical Journal*, June 16, 1888) the notes of a case of pemphigoid eruption, with rapidly fatal termination. The patient, aged seventy-eight, when admitted to the hospital, was, to a large extent, covered with a bullous eruption of fairly symmetrical distribution and was, moreover, as to general condition, exceedingly prostrated, with an elevated temperature. The patient was evidently suffering from renal disease, as the urine was scanty and loaded with albumen. Nineteen days after admission, death ensued, being preceded in the last three days by uræmic symptoms. A microscopical examination of hardened sections of the cutaneous nerve and also of the spinal ganglia and posterior roots showed a parenchymatous degeneration of the nerve fibres. [The duration of the disease before admission is not stated.—Ebs.]

RECURRENT HERPES ZOSTER FEMORALIS.

A case of a tropho-neurotic eruption recurring at intervals is reported (*Monatshefte für praktische Dermatologie*, No. 11, 1888) by DÜRING. The first outbreak had been preceded three months previously by a severe septic phlegmonitis of the left thigh. Following this phlegmonitis, and before the peculiar herpetic eruption manifested itself, there had been in the same region, at intervals of weeks, an erysipelatous-like inflammation; redness and swelling constituting the local symptoms. These attacks were of brief duration, and excepting the first, unaccompanied by any constitutional disturbance. Later the eruption assumed a distinctly herpetic character and corresponded to the course and distribution of the anterior branch of the external cutaneous nerve. Each of these herpetic attacks lasted about six weeks, an outbreak being preceded, for several days, by general symptoms of malaise and elevation of temperature. Several weeks or months would intervene between these herpetic outbreaks. Sea bathing appeared to have an influence in delaying a recurrence. An attack of typhoid fever, also, gave several months' relief from the eruption. In the past year, the patient has also suffered from attacks of herpes præputialis, and these seemed to be, in a sense,

vicarious, as the intervals between the recurrences on the thigh were, during this period, much longer. The patient came under observation in 1881 and up to the present time is still a subject of these attacks.

ON THE TREATMENT OF LUPUS.

As an auxiliary to the ordinary methods of treating lupus, or as an independent method, UNNA advises (*Monatshefte für praktische Dermatologie*, No. 4, 1888) the following lotion: R. Corrosive sublimate, 1; carbolic acid or creasote, 4; alcohol, 20. The nodules are attacked in series of tens, beginning with those at the edge of the patch. They are first punctured with an acne lance, and a minute shred of absorbent cotton moistened with the lotion is inserted by means of a sharpened stick; the cotton rotated and allowed to remain for ten or fifteen minutes. In a few days the punctures and lupus deposits so treated have almost disappeared, and other nodules may be then similarly attacked. This method, the writer believes, has many advantages over the somewhat similar plan of treatment by means of the nitrate of silver stick.

ON THE TREATMENT OF SEBACEOUS TUMORS.

T. MURRAY ROBERTSON states (*British Medical Journal*, June 2, 1888) that in consequence of the objection of many persons with congenital sebaceous tumors and "wens" to the ordinary surgical methods of removal, he has adopted in such cases the following simple plan with marked success: The cyst is punctured with a Gräfe cataract knife and the contents gently expressed, and then a very small piece of silver nitrate introduced. The following day the capsule of the cyst may be readily removed by means of a pair of forceps, coming away "like the shell of a bean," without any part being left adherent. No ill effects have been noted, and a regrowth has not been observed.

URTICARIA PIGMENTOSA.

In the case reported by EISENBERG (*Vierteljahrsschrift für Dermatologie und Syphilis*, Heft 3, 1888) the disease began when the child was six weeks old, and to the time of this report, two years subsequently, it was still persistent. The lesions at first were of the well-known rosy tinge, but soon showed a brownish coloration. The older efflorescences were of a decided olive hue, and the skin, which had been the seat of recurring wheals, was more or less darkly pigmented. The itching, somewhat variable as to degree, was the most annoying symptom. The child was healthy and in spite of the disease remained well-nourished. There was nothing in the family history to throw light upon the case. From time to time the tongue was the seat of whitish, rounded, sharply defined plaques, from which the epithelium exfoliated, leaving red excoriations. Arsenic and sodium salicylate were each perseveringly prescribed, but with negative effect. In the last month in which the child was under observation atropia was given and with considerable benefit. Externally, warm baths, salicylic acid and carbolic acid ointments afforded some relief to the itching.

POST-VACCINAL ERUPTION.

BEHREND reports briefly (*Berliner klinische Wochenschrift*, No. 26, 1888) an eruption, more or less general, following vaccination, in a child eight months old. The lesions, which at first were distinctly papular, changed to urticaria-like spots, and around many appeared a vesicular wall. In places, the eruption became confluent, forming solid sheets, which near the flexures, especially about the genitalia and the anal region, became superficially eroded. In fact, when fully developed, the eruption presented phases of several affections—urticaria, erythema multiforme and herpes iris. The writer again calls attention to a fact to which he had referred several years previously: that in vaccinal eruptions there seem to be two periods for their occurrence—either in the first three days or not until the eighth or ninth day. In the present case the eruption appeared on the eighth day.

TRANSPLANTATION OF CARCINOMATOUS SKIN.

An interesting experiment (*Berliner klinische Wochenschrift*, No. 21, 1888) regarding the effect of transplantation of carcinomatous skin has been made by HAHN. The patient, who had some time previously been operated upon for mammary carcinoma, applied for relief for severe pain and the reappearing carcinomatous deposits. In the neighborhood of the scar had appeared a hard, diffused infiltration and here and there numerous scattered nodules. By reason of the great extent involved and the debilitated condition of the patient, another radical operation was inadvisable, and the experiment was made of excising, in a few places, portions of the affected skin, replacing it by healthy integument from the adjacent parts, and recovering these latter bare places with the excised portions of the carcinomatous skin. The parts healed, but the healthy tissue surrounding the transplanted skin, as a result, became involved in the carcinomatous process.

ACUTE CIRCUMSCRIBED ŒDEMA OF THE SKIN.

Several cases are reported (*Wiener medicinische Presse*, Nos. 11, 12 and 13, 1888) by REEHL. An analysis of the various cases permits the symptoms to be roughly grouped as follows: 1. Evanescient œdema of the skin, subcutaneous tissue and mucous membranes. 2. Stomachic, intestinal (and renal?) disturbances. 3. General symptoms, such as depression, somnolence, etc.; and a fourth group might be added, which would include respiratory disturbances. As yet, the cause of these complex symptoms is, as the author remarks, unknown. The arthritic diathesis has been stated (Chaffart) to be responsible; others look upon the different symptoms as due to regional œdema, as, for example, vomiting, as being due to œdema of the walls of the stomach. Others again, including the author, consider it extremely probable that while the various symptoms are directly due to regional œdema, the exciting cause of these peripheral vaso-motor disturbances is to be found in the central nervous system.

MULTIPLE CIRCUMSCRIBED GANGRENE OF THE SKIN.

Before the Hamburg Medical Society (*Münchener medicinische Wochenschrift*, No. 21, 1888) ARNING exhibited a girl of fifteen years, who, since

eight days previously, had been affected with a peculiar eruption of a gangrenous type. On the face, right shoulder, right thigh and left forearm were to be seen small, sharply defined, gangrenous patches, superficial in character. They had their beginning, as the patient stated, as wheals. The general health, up to the time of the attack, had been excellent. In the discussion, Curschmann remarked that, in the main, there seemed to be three forms of gangrene of the skin—embolic, tropho-neurotic and cachectic. Occasionally, however, exceptions occurred, in which the disease could not be placed in any of these groups.

THE ETIOLOGY OF SO-CALLED "HERPES AREOLARIS MAMMÆ."

The condition described under this name, as STUMPF remarks (*Münchener medicinische Wochenschrift*, No. 25, 1888), does not partake so much of the nature of herpes as of that of eczema. Both breasts are affected and the disease involves the whole areolar region, being sharply defined at the border. Gelatin culture was made with portions of the crust, and gave, as a result, a growth of fungus—a staphylococcus—morphologically the same as the staphylococcus pyogenes aureus. The fungus was also found in the milk of those affected. This latter fact, the writer considers, explains the rebelliousness of the disease, reinfection constantly taking place from the oozing milk. The belief is stated, however, that the disease has its starting-point in the areolar region, and subsequently the staphylococcus gains access to the milk channels.

In the discussion that followed several weak points in the paper were pointed out; it seemed improbable, if the cause was to be found in the staphylococcus, that the disease would stop so abruptly at the margin of the areolar region; and improbable, also, that if the disease was kept up by reinfection from the milk, for the upper part of the areolar region to be so completely affected as the lower half.

POST-ECZEMATOUS FURUNCULOSIS.

The development of furuncles along with or following eczema is, as UNNA states (*Monatshefte für praktische Dermatologie*, No. 3, 1888), not uncommon, and the longer the eczema has lasted and the less antiseptic remedies have been employed, the greater the probability of furuncular lesions. To mitigate and to avoid this complication the incorporation of carbolic acid or thymol in the ointments used for the eczema is advised. The addition of a minute quantity of corrosive sublimate to oxide of zinc ointment, aided by the administration of calcium sulphide, may be considered, however, the most certain method to adopt in cases in which boil formation is likely to occur.

TREATMENT OF ECZEMA.

In simple eczema affecting the fingers and hands, WETHERELL has had (*Lancet*, June 2, 1888), in a number of instances, good results from the following simple plan of treatment: The fingers and parts affected are at night individually enveloped with pieces of lint previously dipped in liquor carbonis

detergens (an alcoholic solution of coal-tar) and over this is bound gutta-percha tissue. The smarting, which is felt when the dressing is first applied, soon disappears. On removal of the lint in the morning the skin looks sodden; a small quantity of lanolin is then rubbed in, in order that the parts may be rendered soft and more pliable. The hands may be left exposed during the day, but the effect is better if they are kept gloved. Every third day the parts are washed with lanolin coal-tar soap. If a few small blisters be present, they may be touched with carbolic acid. In the event of the pure solution of coal-tar being too strong in cases in which there are considerable heat and redness, it may be diluted with from one to ten parts of water. With suitable dietetic management and the use of internal remedies to meet general indications, this method has, the author states, often proved of value.

OBSTETRICS.

UNDER THE CHARGE OF

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THE TREATMENT OF THE VOMITING OF PREGNANCY.

HENNIG (*Münchener med. Wochenschrift*, No. 28, 1888) regards the milder form of vomiting of pregnancy as due to a wound, inflammation or dislocation of the uterus; a distended bladder or rectum may also cause it. The treatment is the removal of the cause.

The more severe form is sympathetic, and a neurosis. Nux vomica and cocoa essence, or cocaine, are sometimes useful in these cases; dilatation of the cervix he has rarely found successful. The induction of labor he considers the only efficient treatment for severe cases.

SÄNGER had seen one case in which the vomiting was caused by carcinoma of the stomach; in another, a laceration of the cervix provoked vomiting, which ceased when the laceration was operated upon.

GÜNTHER (*Centralblatt für Gynäkologie*, No. 29, 1888) regards the affection as a reflex neurosis, and treated five cases by galvanism, the positive pole being placed against the cervix, the negative between the eighth and twelfth dorsal vertebræ. From two and a half to five milliamperes were employed, for seven to ten minutes.

He regards the interruption of the current as the most potent cause of abortion following electrical treatment, and therefore takes especial pains to avoid the accident. His results were good.

TUBAL PREGNANCY, WITH EXTIRPATION OF THE FŒTAL SAC.

DOLÉRIS (*Bulletins de la Société Obstétricale*, No. 6, 1888) presented, at a recent meeting of the Obstetrical Society of Paris, the fimbriated extremity

of the left Fallopian tube, with a five months foetus, which he had removed, with fatal result.

Rupture had just occurred when the operation was performed. The removal of the sac left a large cavity in the pelvis, the intestines being confined by adhesions; three large bleeding surfaces remained for treatment. The patient died of shock.

CHAMPIONNIÈRE did not believe in extirpating the sac in these cases. He had operated twice successfully by laparotomy, removal of the foetus and draining the sac. It is in exceptionally simple cases that the sac can be extirpated.

EXTRAUTERINE PREGNANCY SIMULATING OVARIAN TUMOR.

ROSTHORN (*Wiener med. Presse*, No. 24, 1888) reports the case of a patient who presented an ovoid tumor at the right cornu of the uterus, which was thought to be an ovarian cyst. The tumor was removed; a portion of its substance extended into the uterine tissue. The patient made a prompt recovery. Dissection showed the tumor to be an extrauterine pregnancy.

Rosthorn divides these cases into tubal, ovarian and abdominal, and pregnancy in the uterine cornua. He recognizes the difficulties which attend the diagnosis in these cases, and believes that in exceptional women the epithelia of the abdominal cavity possess the property of developing a placenta and nourishing an ovum; this is known to occur in some animals.

The only method of treatment which offers a reasonable promise of cure he believes to be laparotomy, no matter at what stage of pregnancy undertaken.

AXIS-TRACTION FORCEPS AMONG GERMAN OBSTETRICIANS.

An interesting discussion, showing the views of German obstetricians regarding the use of axis-traction forceps, was opened at the recent meeting of the German Society for Gynecology (*Münchener med. Wochenschrift*, No. 25, 1888), by BUMM, of Würzburg, who stated his satisfaction with Tarnier's forceps.

He had found the weight of the instrument an advantage, and had rarely used the compressing screw, but allowed the head to mould itself and rotate freely as extraction proceeded. He applied them as he did ordinary forceps.

SÄNGER thought the broad handle of these forceps a great aid to easy traction.

DÜHRSEN, with the Gusserow school of obstetricians, did not approve of axis-traction, but adopted Hofmeier's suggestion, to press the head into the pelvis externally and apply short forceps.

WINCKEL preferred Breus' forceps, as lighter than Tarnier's.

[The Breus forceps is longer than the ordinary forceps, with more pronounced pelvic curve, and has a light traction rod, detachable, smoothly fitted at the posterior extremity of the cephalic curve; it is commonly used in Vienna for axis-traction.—Ed.]

THE TREATMENT OF ABORTION AND PREMATURE BIRTH.

WINCKEL (*Münchener med. Wochenschrift*, July 10, 1888) concludes that in the greater number of cases of abortion and premature labor the removal

of the ovum is best accomplished by nature: fever, profuse hemorrhage and suppuration are the indications for prompt removal of the ovum. The best method of removal is by the hand, expression and enucleation of the ovum, after the uterus has been thoroughly disinfected by boric acid or creolin.

The curette should only be used when small portions of the membranes remain adherent, and cannot be removed by the hand. Retained decidua does not require the use of the curette. When suppuration occurs after the removal of the greater portion of the ovum, the remaining fragments are most safely removed by repeated antiseptic intra-uterine injections.

THE BACTERIAL CONTENTS OF THE LOCHIA.

OTT (*Archiv für Gynäkologie*, Band 32, Heft 3, 1888) has examined the contents of the uterus and vagina for bacteria, and found that in a healthy puerpera the uterus and upper portion of the vagina contain no germs. He concludes that the lochia of healthy women are innocuous. His method was different from those of Döderlein and Winter, with the former of whom his results agree.

THE SPREAD OF PUERPERAL DISEASE BY INDIRECT INFECTION.

FEHLING (*Archiv für Gynäkologie*, Band 32, Heft 3, 1888) regards direct infection, since the hands and instruments of obstetricians are disinfected, as infrequent. He believes that pathogenic germs often obtain access from infected linen and furniture, and from the atmosphere. He cites a case in his own experience in which erysipelas and puerperal sepsis followed the bursting of a drain which infected the air of a ward. He considers primary infection to be that conveyed by direct contact of pathogenic germs from without. Secondary infection is produced by the absorption of ptomaines produced by germs which have entered the genital canal before or after labor.

PRACTICAL DISINFECTION OF THE FEMALE GENITALS.

STEFFECK has made experiments upon various methods of disinfecting the cervix and vagina, and concludes that, practically, thorough disinfection cannot be obtained by one application of any agent, but by repeated use.

Irrigation of the vagina and cervix with a quart of bichloride of mercury solution 1 to 3000, or carbolic acid 3 per cent., must be followed by irrigation of the vagina at intervals of two hours with the same antiseptic to reduce the possibility of auto-infection to a minimum.—*Centralblatt für Gynäkologie*, No. 23, 1888.

ACETIC ACID AS AN ANTISEPTIC IN OBSTETRICS.

ENGELMANN (*Centralblatt für Gynäkologie*, No. 27, 1888) reports his results in the use of acetic acid as an obstetrical antiseptic, as follows: It is as efficient as carbolic acid, less harmful, and penetrates the tissues more deeply than bichloride of mercury or carbolic acid. Metallic instruments may remain in a three per cent. solution fifteen minutes without injury. Its use upon the hands is not disagreeable. Engelmann has employed it in three

per cent. solution for ordinary purposes, and five per cent. where a stronger agent was needed, in various obstetric cases with good results. A five per cent. solution is slightly irritating.

THE ETIOLOGY OF ECLAMPSIA AND ALBUMINURIA.

SANTOS (*Archiv für Gynäkologie*, Band 32, Heft 3) records fifty-three cases of eclampsia in the Buda-Pesth clinic, and concludes from his study of the subject that albuminuria in pregnancy is the result of a reflex irritation of the sympathetic and renal nerves caused by the increasing distention of the uterus, and the irritation of the uterine nerves by this distention and subsequent contraction. It is physiological in pregnancy, and a diagnostic symptom of pregnancy. This conception accounts for the more frequent occurrence of albuminuria in young women, in whom reflexes are most easily excited. Any condition heightening the general reflexes favors albuminuria.

Santos regards eclampsia as an "acute peripheral epilepsy," whose genetic zone is the uterus. Upon this basis he readily explains the action of narcotics, and rare cases in which eclampsia occurs without albuminuria.

PYÆMIA AFTER ABORTION, FOLLOWING LATENT INFECTION WITH ERYSIPELAS.

DÖDERLEIN, at the German Society for Gynecology (*Münchener med. Wochenschrift*, No. 25, 1888), reported a case of instrumental abortion for obstinate hemorrhage, which was followed by fever and death.

Post-mortem examination revealed no gross lesions of the genitals, or the lymphatics communicating with them. Bacteriological examination of the contents of the uterus showed streptococci present; they were also found in one knee and middle finger and in pus at the base of the skull. Purulent meningitis was the cause of death; there was no peritonitis.

The patient had suffered from erysipelas a year previously, and the source of infection in the present instance was the cervical lymphatics, which were softened in the centre and contained streptococci; this latent infection had been made active by abortion.

Döderlein stated that puerperal sepsis arose from infection of the uterine cavity, or from specific infection of the lesions occurring at labor. Micrococci introduced into the vulva by unclean coitus, masturbation or intestinal disease, may also infect the cavity of the uterus.

It is evident that we cannot discuss clearly the question of auto-infection until we have disinfected the vulva and vagina in cases under observation.

THE INFLUENCE OF BACTERIA UPON THE DIGESTION OF CHILDREN.

BAGINSKY, in a paper before the Berlin Medical Society (*Berliner klinische Wochenschrift*, No. 26, 1888), states that the bacterium of the lactic fermentation causes the production of acetic acid and acetone, as well as lactic acid. This formation goes on without oxygen and is not hindered by the bile. The neutral lactates are changed to butyric acid; starch is not changed to

sugar, nor is casein or albumin decomposed. The gases formed when acetic acid is produced are carbonic acid, hydrogen and methane.

He proposes to style this bacterium the acetic bacterium. He further found that this bacterium is destroyed by acetic acid. In examining the stools of children suffering from *cholera infantum* he isolated a bacterium which produced green stools (the germ of Hayem and Lesage) and also a bacterium growing in white colonies. Both of these liquefy gelatine and both are inhibited in their development by the acetic bacterium; this germ has the property of preventing the growth of pathogenic germs in the intestine.

Baginsky considers that only the primary manifestations of *cholera infantum* are caused by bacteria, and that the secondary, severer phases result from the extensive anatomical lesions in the intestine which have occurred. It is evident that the treatment of a given case will depend upon the stage of the disease. He found calomel, boric acid and resorcin prevent the growth of the acetic bacteria; naphthaline and iodoform are inert. If the case is seen early, when acetic fermentation is excessive, these remedies and the withdrawal of milk are indicated. If pathogenic bacteria have accumulated in the stomach or intestines, irrigation with antiseptic fluids is advised. Each case must be studied separately, and interference with the conservative processes, as shown in the inhibitory action of certain bacteria, should only be undertaken intelligently.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

THE ETIOLOGY OF VULVO-VAGINITIS IN CHILDREN.

POTT (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3) has had ninety-six cases of vulvo-vaginitis in children, more than one-half of whom were under five years of age. He attributes it to direct specific infection, or some general dyscrasia, as syphilis or tuberculosis. Epidemics occurred from the infection of several children in the same family, through the medium of soiled linen, sponges, etc. Cases of direct communication of the virus are rare, the writer having observed only three. The entrance of *oxyures vermiculares* into the vagina was supposed to be a common source of vaginitis, but he found that gonorrhœa was more often the true cause, in fact, he seldom failed to find gonococci.

In discussing the above paper, PROCHOWNICK stated that he had found the cocci in seventeen out of twenty-one cases of vulvo-vaginitis in children. All these patients suffered from severe urethritis.

SÄNGER said that he had seen epidemics of vaginitis in families. In one instance a girl three and one-half years old developed intense peritonitis in

consequence of gonorrhœal infection; he believed that cases of pyosalpinx and old localized peritonitis in young virgins might possibly be referred to gonorrhœa contracted in childhood.

MELANOTIC TUMORS OF THE FEMALE GENITALS.

HAECKEL (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3) reports a case of melanotic growth, involving the external genitals, with secondary involvement of the inguinal glands. The entire mass was extirpated and the patient made a good recovery, but died five months later from metastases in the abdominal viscera. Microscopically the growth was a melano-sarcoma. According to the writer, only ten similar cases were recorded. Melanomata of the internal genitals were still more rare, only two authentic cases of primary disease of this character being on record. Such tumors never developed primarily in the ovaries. When found in the vagina they were secondary to disease of the external genitals. The majority of these pigment-tumors were sarcomata. They gave rise to very few symptoms, pain, ulceration and hemorrhage being rare. They grew rapidly, soon involved the neighboring lymphatic glands and tended to undergo retrograde changes and to form metastases in distant organs.

The diagnosis was made by their color, which was characteristic; they might rarely be confounded with ordinary sarcomata into which hemorrhages had taken place.

The prognosis was absolutely unfavorable, most of the patients operated upon dying from metastases in a few months; only two cases had been reported in which there was no recurrence after operation. Still, operative interference was justifiable, in order to relieve pain and hemorrhage, even when it was impossible to remove all the disease. If the inguinal glands were affected, they should be extirpated like the axillary glands in amputation of the carcinomatous breast; it was also desirable to remove all the masses of fat lying between the tumor and the affected glands, in the hope of excising also the diseased lymphatics which run in them.

SIMPLE AND MALIGNANT ADENOMA OF THE UTERUS.

RUGE (*Id.*) describes clearly the microscopical differences between the two forms of adenoma, in a paper read at the recent meeting of the German Gynecological Society. The benign form is characterized by simple hypertrophy and hyperplasia of the glands. The mucous is no longer sharply separated from the muscular layer; the interstitial tissue undergoes marked changes, the cells increasing in size, so as to resemble those of the decidua, while their nuclei become more numerous. Diffuse and circumscribed adenoma is simply hyperplastic glandular endometritis. If small submucous fibrous polypi undergo a similar change by a development of the glands in the mucous membrane covering them, they must also be classed with adenomata, and are to be regarded with some suspicion; in fact, the uterus has often been extirpated on account of the uncontrollable hemorrhage to which they gave rise.

In malignant adenoma, in addition to the glandular hyperplasia, there are changes in the entire uterine tissue, while metastases occur in other organs; in short, the condition is "clinically and anatomically true cancer." The

solid cell-processes invade the deeper parts to a greater extent than is common in cancer. Extreme glandular hyperplasia is the characteristic mark of malignant adenoma. In general, the microscopical diagnosis of affections of the endometrium present unusual difficulties.

CARCINOMA UTERI ASSOCIATED WITH FIBROMYOMA.

LÖHLEIN (*Centralblatt für Gynäkologie*, July 29, 1888) presented, at a recent meeting of the Berlin Obstetrical Society, a uterus removed *per vaginam* on account of carcinoma of the body of the uterus. Aside from the ordinary symptoms, the patient had complained of periodical attacks of pain, which began at ten o'clock every morning, reached their maximum severity at noon and disappeared at four o'clock in the afternoon. Simpson had originally called attention to this phenomenon. The operation was so difficult that the idea was entertained of resorting to supra-vaginal amputation. Löhlein stated that it was now known that the association of carcinoma and fibroma was not so rare as was formerly supposed. He had noted it in two out of seven cases.

CHLORIDE OF ZINC AS AN ESCHAROTIC IN CARCINOMA OF THE CERVIX.

EHLERS (*Id.*), at the same meeting, reported several cases in which he had used this agent in accordance with Van de Warker's suggestion. He had made microscopical examinations of portions of the growth in each instance in order to discover how deeply the caustic had penetrated. He had found it somewhat unmanageable, since it often destroyed the healthy tissue more than that which was diseased; it had, in his opinion, no specific action.

In the discussion which followed OLSHAUSEN said that he disliked to apply chloride of zinc to the uterine mucous membrane, because of its tendency to form extensive cicatrices; he preferred tincture of iodine, which had the property of checking hemorrhage and diminishing the secretion.

BRÖSE stated that he had treated a large number of cases with the chloride without having noticed resulting stenosis in a single instance.

RHEINSTÄDTER's experience had been similar. He thought that the chloride only destroyed the superficial layers of the mucous membrane, which were reproduced without cicatrization, as after the use of the sharp curette.

LÖHLEIN said that he had used this agent in certain inoperable cases of carcinoma, and had not found, as Van de Warker had stated, that the prolonged contact of a concentrated aqueous solution of the chloride with the diseased tissues led to the formation of a line of demarcation between these and the healthy portion of the cervix. He had observed no bad results after its use; the wound granulated well, and in two instances firm cicatrices were formed. It presented no advantages over other caustics.

VOWINCKEL said that he was accustomed to use chloride of zinc paste, according to the method practised in Czerny's clinic, viz.: Four parts of chloride of zinc, three parts of flour and one part of oxide of zinc were made into a paste with water, and this was enclosed in a piece of gauze, to which was attached a thread. After the diseased tissue had been thoroughly scraped away with a sharp spoon, and the hemorrhage was checked, this tampon was applied to the raw surface, the vagina being protected by a coating of vaseline.

After remaining *in situ* for about six hours (or for a less period if there was danger of perforating the recto- or vesico-vaginal septum), the caustic was removed and the vagina was tamponed with iodoform gauze. In this way the action of the zinc was confined to the diseased tissue, hemorrhage did not occur and the pain was not excessive.

MARTIN'S experience with Canquoin's paste had often been favorable, but he had been led to abandon it because of cases in which severe hemorrhage and perforation into the bladder, rectum and peritoneal cavity resulted from its prolonged contact with the tissues.

CASTRATION IN CASES OF OSTEOMALACIA.

FEHLING (*Archiv für Gynäkologie*, Bd. xxxii. Heft 3), from a study of many cases of this affection and an analysis of the results of operative interference during labor, has arrived at the conclusion that removal of the ovaries offers a cure. All the patients with osteomalacia who have recovered after Porro's operation (twenty-four) were cured of the osseous affection, so that they were able to walk about again and to work. The writer himself has had four cures. This leads him to believe that the disease may be arrested before the patient is allowed to become pregnant, by inducing the premature menopause. He has performed oöphorectomy with this object in three cases; the first was entirely successful, in the second there was speedy improvement, but after a few months the softening of the bones recurred, although pain was absent; in the third a sufficient length of time has not elapsed since the operation to permit any positive statements with regard to the result, although the patient was able to walk about soon after the operation. In every case the ovaries were small, though not atrophied, while there were large varicosities in the broad ligaments.

INTESTINAL OBSTRUCTION AFTER LAPAROTOMY.

NIEBERDING (*Id.*) reports three cases of obstruction, in one of which a loop of intestine escaped through a hole in the mesentery and was nipped. In the two others the gut became adherent to the wound; the abdomen was reopened in both instances, but the patients succumbed from peritonitis. He had cleansed the peritoneal cavity with dry sublimated gauze, and wondered if this had acted as an irritant.

KALTENBACH replied that he had frequently observed similar adhesions of the gut, and attributed them to two causes, the use of too concentrated antiseptic solutions, and imperfect disinfection of the peritoneal cavity after septic material had entered it.

PLEURISY AS A COMPLICATION OF OVARIAN CYST.

DEMONS, at a meeting of the Paris Société de Chirurgie (*Annales de Gynécologie et d'Obstétrique*, June, 1888), called attention to the frequent association of pleurisy with ovarian cyst, which he had observed in nine out of fifty cases. Pleuritic effusions may be unilateral or bilateral, and may even be on the opposite side to the tumor. Although they usually accompany large cysts, in some instances the latter may be small; if a patient, having a

tumor not sufficiently large to interfere with respiration, is attacked with dyspnœa, pleurisy should be suspected. It is important to note the incorrectness of the general view that pleural exudations always indicate the presence of malignant disease of the ovaries, with secondary affection of the pleura. The adoption of this theory would lead surgeons to refrain from operating upon patients with simple ovarian tumors. The effusion may be due to an obstruction of the lymphatics of the pleura, following a similar obstruction of those of the abdomen from the pressure of the tumor.

In the discussion which followed, TERRIER stated that he had observed the association of pleurisy and ovarian cyst, and generally attributed the former to secondary cancerous disease, even when the cyst was apparently non-malignant; nevertheless, operative interference in these cases was not contraindicated, because, if the pleuritic effusion was due simply to pressure it would disappear after removal of the cyst, but if it was of cancerous origin the patient had nothing to lose from the operation. He always punctured the pleural cavity before performing laparotomy, when there was extreme dyspnœa, and had never regretted having done so.

BOUILLY believed that the complication was rare, having noted it only twice in twenty-five or thirty cases. There was no reason why effusions should not accompany simple, as well as malignant cysts, although the prognosis was different in the two cases.

CHAMPIONNIÈRE thought that pleural effusion, or, more properly, hydrothorax, was most frequently associated with proliferous cysts, with or without resulting ascites; the prognosis was always grave. An examination of the urine would show that the daily amount, as well as the quantity of urea, was considerably diminished.

TERRILLON had discovered a pleuritic effusion in only three out of one hundred and twenty cases of ovarian cyst, although he always examined the thorax carefully. He recognized two forms of effusion, the simple variety accompanying benignant tumors, in which absorption readily occurred, and that associated with cancerous or proliferous cysts, in which there was probably secondary disease of the pleura.

VERNEUIL said that any abdominal tumor, whether connected with one of the pelvic or abdominal viscera, might be complicated with pleural effusions. Potain had shown that a similar effusion might result from congestion of the ovaries and peri-ovarian tissues, from reflex irritation and hyperæmia; it might be on the same side as the affected ovary, or on the opposite side.

PUBLIC HEALTH.

UNDER THE CHARGE OF

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VACCINATION STATISTICS IN GERMANY FOR 1883.

There were in Germany, in the year 1883, 1,367,569 children who had attained the age when vaccination was obligatory, but of these, 139,611, or

10.21 per cent., remained unvaccinated, 99,496 of them being, as stated by certificates from medical men, unfit for vaccination. Of those who were vaccinated, in 1,190,163 cases, or 87.03 per cent., the result was successful, in 32,280 it was unsuccessful, and of 5517 nothing is known, as they did not return for examination. With regard to the localities in which the greatest proportion of children were vaccinated, Swabia may be considered to rank highest with 97.17 per cent., and Bremen the lowest with only 70.63 per cent. Of the total number in Germany, 108,182 were vaccinated with humanized lymph and 145,526 with animal lymph; in addition to these were 12,989 children, with whom it is not stated what kind of lymph was used. The total number of children who were revaccinated was 930,732, leaving unprotected by revaccination 38,086 children; of those who were revaccinated, in 820,336 cases the vaccination was successful; the best results, viz., 97.33 per cent., were obtained in Schaumburg-Lippe and in Lower Bavaria, where the results were 96.14 per cent. The majority of those children who were unsuccessfully vaccinated were revaccinated in the following year, and thus the number remaining not revaccinated is very small. There were 831,072 revaccinations performed with humanized lymph, and 96,404 with animal lymph.

Extracts from reports of the various provinces give information concerning the period of the year when vaccinations are performed, the kind of place used for the purpose, the method of the operation, and the number of vesicles required by the different governments. Generally, from May to September most of the vaccinations take place, and but few towns have special accommodation, public buildings, town halls, schools, gymnasia, etc., being used as vaccination stations. In some provinces it was considered desirable that vaccinations should be postponed, owing to the prevalence of one kind of epidemic disease or another; in other provinces no postponement was made. Specially appointed medical men perform vaccination in most of the provinces, the methods employed in the operation varying in almost every province. To obtain lymph for the general vaccinations persons are vaccinated before the customary period with lymph obtained from government institutions, from some of which only humanized, from others animal lymph is sent, sometimes mixed with glycerin and sometimes as a dried powder; where animal lymph was much used, as in Hesse and Baden, the insertion success was from 96 to 100 per cent., and there a paste of lymph and glycerin was used.

In Wurtemberg there were 30 cases of original cowpox, from 10 of which inoculations in man were successfully performed, and from one case an animal was inoculated. The opposition to vaccination had not increased in the course of the year, and occurred in many cases more from neglect and ignorance than from any intentional desire to prevent the children being vaccinated. As regards the cases of illness and death occurring after vaccination, there were some of the former from inflammation and glandular enlargement, but none was fatal; erysipelas caused 11 deaths, blood-poisoning 2, in Prussia and in Posen; and some instances of skin eruptions are mentioned, but not one case was observed of syphilis having been transmitted by vaccination. One child appears to have thrust its head against a lancet when already charged, a vesicle forming on the place of the

wound ; and a girl of twelve years old, when revaccinated, fainted.—*Arbeiten aus dem Kaiserlichen Gesundheitsamte*, Band II., Hefte 1 and 2.

THE UPPER SILESIAN ZINC INDUSTRY, AND ITS INFLUENCE ON THE HEALTH OF THE WORKERS.

The zinc smelters in Silesia are mostly taken from amongst the Sclavs, who, according to DR. TRACINSKI, are of middle height, with ill-developed physique and of phlegmatic temperament, almost approaching indolence. Their mode of living, until the last few years, was most miserable; they subsisted on vegetables and bread, living in huts with all kinds of animals, from early life compelled to assist their parents in the hardest labor, exposed to privations of all sorts and mostly devoted to alcoholic excess. In this way they became a prey to the various diseases consequent on their occupation, and rarely attained to old age; but of late years great progress has been made with regard to their dwelling and food arrangements; they chiefly inhabit two-storied houses, which they obtain at moderate cost, or they are permitted to buy plots of land on which they build their own houses. The wages have increased, so that they are enabled to live on meat and bread instead of vegetables, and they clothe themselves more warmly in winter than formerly, thus guarding themselves against chills. In some factories, arrangements are made for workmen's baths and in most of the smelting villages there is one sick club, if not more, which secures for the workman, if he pays regularly, free medical attendance and medicine, and, if necessary, removal to a hospital, besides an allowance during his illness. If alcohol could be forbidden in zinc works as in mines, there would soon be a still greater improvement in the health of the workmen; but the nature of their employment brings in course of years fatal diseases to all who are engaged in smelting works. The dust which is inhaled and the irritation of the sulphurous gas induce obstinate catarrh of the air-passages which leads finally to emphysema of the lungs. The disturbance of the circulation causes a failure in the oxidation of the blood, and, besides, the dust and metallic substances such as lead, sulphur, cadmium and sometimes arsenic and zinc, which are swallowed, cause diseases of the mucous membrane, disturb the digestion and produce catarrh of the stomach. By degrees, the whole constitution begins to suffer, the muscles dwindle away, the skin loses its color and becomes ashen and pallid, the eyes are sunken, the body is bent, the walk slow and dragging, either in consequence of repeated attacks of rheumatism, or that through disease of the muscles caused by lead. Thus it may be reckoned the age at which a zinc smelter ceases to be capable of work is forty-five years.

Efforts should be directed toward procuring for workmen good drinking water, opportunity for washing and bathing, and, when possible, the introduction of Siemen's stoves and suitable receivers, so as to shut off the smoke from the smelting houses.—*Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege*, Band 20, Heft 1, 1888.

LEAD-POISONING.

In 1887, upward of a hundred persons near Roanne, in France, were attacked with colic of great severity; some suffered from lassitude and general

pains, others from vomiting. It was later discovered that some had well-marked blue lines on their gums, and the water-supply was examined, but as it was derived from several sources, it was eliminated from suspicion. Other articles of food were examined, and especially the flour, when it was ascertained that about sixty people, who were seriously ill, had partaken of flour from a particular mill. A sample of this rye flour was analyzed, and lead was ascertained to be present in it, though to what extent could not be estimated. It was then discovered that the grain at the mill was transported to the millstones by means of an elevator of buckets which were found to consist of tin-plate containing a good deal of lead. The rye flour which passed through these buckets contained not less than five ounces of the metal which had been rubbed off into the grain, and those persons who had eaten rye bread exclusively suffered most severely, while those who used wheaten flour, obtained from another elevator, were not attacked at all. In certain parts, also, a deposit of sulphide of lead was found, owing, probably, to the cracks in the grindstones having been filled with sulphur and which had been brought in contact with the buckets.

Another case of lead poisoning was in March brought before the Paris Société de Chirurgie by M. Dugué. A woman, thirty-eight years old, was employed in a factory to gum small bands of paper on to colored cardboard boxes. In order to pick up the bands she was obliged each time to wet her fingers with her tongue and afterward to wet one side of the band that was colored gray, the other side being colored orange, so as to gum the band on to the box. She frequently gummed as many as five thousand in one day; she stated that her companions, when doing the same work, became pale and thin and suffered from colic, while those who gummed the blue bands did not suffer at all. The bands of paper were analyzed and each was found to contain one-fifth of a grain of lead in its metallic state.—*Sanitary Record*, January and March, 1888, pages 337 and 430.

OUTBREAK OF FEBRILE DISEASE.

DR. RUSSELL, Medical Officer of Health for Glasgow, has published the history and circumstances of a peculiar outbreak of febrile disease during March of this year, in St. Mary's Roman Catholic Industrial School in Glasgow. Children were taken ill with headache, in a few hours became unconscious or maniacal and died; others, after a few hours' illness, suffered from pneumonia and herpes, eventually recovering, while others, again, passed through a pyrexial attack of an ill-defined nature. The school consisted of 207 boys and 194 girls; 66 of the former and 2 of the latter were attacked, the cases being 4 which ended fatally, 31 with severe symptoms recovering and 33 mild cases. In two bodies examined, the most important appearance was that of the intestines, which in each case showed considerable enlargement of solitary follicles and Peyer's patches, together with enlargement of the mesenteric glands.

The food supplies for the boys and girls were received from a common kitchen and could be eliminated from suspicion. There was, however, an amount of intercommunication between the two schools, which in the case of an infectious disease, such as typhus, scarlet fever or smallpox, appearing in

one institution, soon gives practical demonstration of reality. The two girls attacked were both employed in the kitchen, one of them was a sister of one of the boys attacked, and was visited by her mother immediately after she had been with her son in the boys' sick room. As regards the other girl there was no element suggestive of infection excepting employment in the kitchen.

Dr. Russell gives the following summary of his investigation: "The schools are situated in a densely populated district; they are enclosed by surrounding tenements and other large buildings, together with a graveyard which was in 1875 described as "greatly overcrowded with bodies and kept in a state of rank disorder," and in which have since been interred 577 bodies; the free space attached to the schools, and available for exercise, is small; the internal air-space in both is deficient; the inmates are children between five and fifteen years of age, who are weak in constitution, tainted with a proclivity to scrofulous diseases, and generally of low vitality; the death-rate is higher than that of other industrial schools which have received the same class of Glasgow children; the proportion of total deaths from pulmonary diseases is enormous, contagious or infectious disease is nearly always present, and there have been repeated epidemics of typhus fever, a certain indication of overcrowding."

The overcrowding is much greater in the boys' school than in the girls', the internal arrangements are more defective, the general sanitary condition of the building is inferior, the general mortality and especially that from pulmonary diseases is considerably higher. Dr. Russell states that he considers the outbreak in March to have been "a febrile disease tending to implication of the lungs and especially to pneumonia; it suggests a specific poison from family resemblance, in explosive character, local limitation, and clinical features, to other well-known typical diseases of the epidemic and infectious class. No specific microörganism was discovered in this outbreak.

The rapid fatality of the fatal cases shows that this poison was the cause of the disease, though in cases in which life was not at once extinguished it tended to expend itself upon the organs of respiration. The local disease was the result of a constitutional infection which was capable of killing without the local disease. The post-mortem appearances pointed to a specific poison allied to that of enteric fever. Such as they were, they were distinctly lesions of the mesenteric gland and of the glandular system of the small intestine. The experience of the Fever Hospital (Glasgow) is strongly suggestive of a causal affinity between certain forms of pneumonia and enteric fever. —(History of a Peculiar Outbreak of Febrile Disease. By J. B. RUSSELL, M.D., Medical Officer of Health for Glasgow.)

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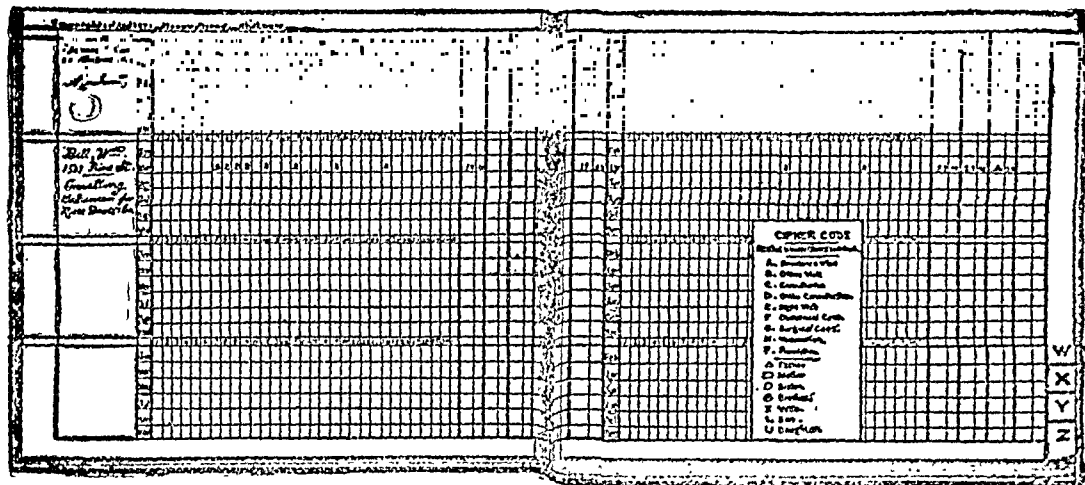
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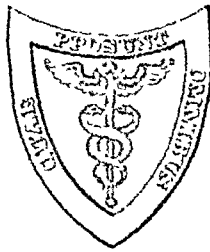
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THE
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NOVEMBER, 1888.

THE TREATMENT OF VALVULAR DISEASES OF THE HEART.¹

By J. M. DA COSTA, M.D., LL.D.,

PROFESSOR OF THE PRINCIPLES AND PRACTICE OF MEDICINE IN THE JEFFERSON MEDICAL
COLLEGE, PHILADELPHIA.

THIS paper is intended to deal with matters connected purely with the treatment of valvular diseases of the heart. In it I desire to record some opinions formed by experience; to trace lines of procedure; to see in how far new therapeutic agents have added to our resources; and to try to make out in what direction the hand of progress points.

Corvisart's famous quotation as a motto for his classical treatise on diseases of the heart, *Hæret lateri lethalis arundo*, represents the thought for a long time prevailing, and still largely adhered to, certainly as regards valvular affections, that nothing can be done for such grave conditions: the fatal arrow must stay implanted until death loosens it. Side by side with this opinion has been, of late years, the doctrine strongly urged that treatment should be based on the particular mischief at valves and valve openings and its supposed necessary consequences on the walls, and rules are laid down for the use or avoidance of remedies in accordance with these preconceived ideas, and with the special name the valvular disease bears. Thus, in mitral regurgitation, as well as, and even more markedly, in mitral narrowing, digitalis is to be employed to increase the propelling power of the heart; in aortic regurgitation, with its large left ventricle, this drug is to be avoided—may be even dangerous; and, as the resulting hypertrophy is mostly

¹ Read before the Association of American Physicians, September 19, 1888.
VOL. 96, NO. 6.—NOVEMBER, 1888.

sufficient, digitalis is of little or no use in aortic narrowing. In tricuspid regurgitation we are taught by some never to omit its use, whatever else we do ; by others, that as there is no compensatory muscular change, it is impossible that it can be of any service.

Now, from these doctrines and the suppositions on which they are based, I dissent. I think they only embody half truths, which, rigidly applied, will lead to wrong practice. I believe they ought to be taken simply as very general statements concerning the particular tendency of each valve disease, but not be the guide in an individual case without an accurate study of the special features of that case. I hold, then, that the precise valve affected is not, with our present resources, the keynote to the treatment of valvular heart disease. Much more important is it to regard the state of the muscular fibre ; the size of the cavities ; the condition of the arteries, veins, and capillary system ; the secondary results of the cardiac lesion ; the control of the nervous system. Important, too, it is to bear in mind the cause of the malady. Holding these views and largely based on them, I advance these propositions for the management of cases of valvular disease of the heart. We are to take as indications :

1. The state of the heart-muscle and of the cavities.
2. The rhythm of the heart-action.
3. The condition of the arteries and veins and of the capillary system.
4. The probable length of existence of the malady, and its likely cause.
5. The general health.
6. The secondary results of the cardiac affection.

It is on these considerations that the treatment of valvular affections turns, and the first of them is, from a practical point of view, the most important. It influences action in diverse ways. Thus, if we have a case with heart muscle which has increased in size simply to the extent necessary to overcome the difficulty made by the valvular imperfection ; in which the cavities are but little stretched ; in which a stronger impulse is not associated with marked apex displacement or with greatly increased transverse percussion dulness ; in which the arteries do not throb inordinately, nor the veins are turgid, nor the surface mottled and the capillary circulation sluggish ; in which there is no dropsy, no respiratory embarrassment ; in which the general health is good, and exercise does not produce inordinate distress,—we know that compensation has fairly followed injury, that heart muscle and cavities are in, for that case, healthy condition, and should endeavor to keep them so by simply regulating the patient's life and habits. No matter by what name the valvular disease is labelled, there ought to be no interference with it by drugs, certainly not be remedies which act on the heart.

label.

But the same patient may show excessive cardiac growth and force, and be greatly benefited by cardiac sedatives; or later he presents a halting beat of the heart, the cardiac dulness has increased, so has the impulse in extent, but not in force; there is œdematous swelling around the ankles; the veins are more prominent; lungs and liver are engorged; small vessels are visible in the skin, and are tardily emptied by pressure;—the stretching, faltering heart calls for support, and is rallied, made regular, and kept for a long time performing its functions admirably, by the persistent employment of moderate doses of digitalis. Yet this is the same patient; all the while the disease bears the same name. But his treatment has been followed by such striking results because the state of the heart muscles and of the cavity has been fully recognized, and been made the basis of remedial interference.

Persons thus supported in their circulation may be kept alive for years and capable of leading useful lives. But this is not the main point I wish to bring out. It is chiefly that the same valvular disease will at different times, according to the varying state of heart muscle and cavity, require very varying treatment. In truth, I have had cases come under my observation in which the active state of the circulation, the marked hypertrophy, the cardiac uneasiness were always greatly relieved by aconite, and so much aggravated by digitalis, which produced a sense of cerebral uneasiness and weight, that the patient had the greatest dread of this drug, even for temporary purposes; yet I have known such cases in time, when the heart began to weaken, owe, for years, their life to the steady use of digitalis.

The class of cases just alluded to, chronic in their course with slowly deteriorating compensation, are, usually, those in which small doses of digitalis act so favorably. The quantity required is, indeed, rarely more than ten drops of the tincture twice daily, kept up until the effect on the heart and pulse becomes perceptible—which may be in a week or in several,—and then suspended, to be resumed according to circumstances. Nay, I have found a single dose of ten drops, repeated once in twenty-four hours, preferably at bedtime, show the same happy results. Some patients do better with five drop doses, every fourth or sixth hour. But the rather larger dose, at longer intervals, is usually the less disturbing plan. Should the digestive organs become deranged, I use digitalis by suppository; from two to four minims of the fluid extract incorporated in cocoa butter are efficient.

Digitalis acts in the cases under consideration chiefly as what is called a heart tonic; it makes the contractions of the cardiac muscle stronger and slower, it produces a fuller flow in the finer vessels. It answers, as already stated, in small or in very moderate doses. It is required in much larger amounts in those instances of valvular disease, comparatively rare, in which there is almost from the first dilatation and all the

excessive feebleness of circulation this brings with it; or in which, late in the history of the valve affection, the dilatation has outstripped the hypertrophy. Under both these circumstances of cardiac weakness, digitalis may be alternated with strychnia and supplemented by alcohol.

There is yet another cardiac condition encountered in valvular disease, in which digitalis is the principal remedy, and in still larger doses. It is where the compensatory hypertrophy is gradually lessening in proportion to the valvular defect; where the venous system is becoming gorged, the breathing much oppressed, the internal organs congested; where the feet are beginning to swell, the pulse is rapid and compressible, and the heart often fitfully excited; it is when the symptoms become rather suddenly aggravated, and a sense of weight and distress in the cardiac region suggests that the organ does not fully empty itself, that larger doses of digitalis will show a wonderful influence. Fifteen minims of the tincture every second or third hour will not only cause the struggling organ to contract powerfully and help the general circulation, but will diminish the choked condition of the cavities, notwithstanding that up to a certain point digitalis prolongs the diastole. The action of the drug is helped by ammonia, by brandy; but while given in these large doses the patient must be kept at rest. The mischief once checked, smaller doses will again show their good effects. We may meet with the condition under discussion in any case of valvular disease; undoubtedly most often in mitral complaints, but also in advanced stages of aortic regurgitation; and, if in the latter affection, we need not be deterred, on theoretical grounds, from withholding the treatment indicated.

In the remarks just made it has been assumed that we are dealing with hearts in which the muscular fibre, however increased, is, on the whole, healthy; in other words, not in a state of degeneration. But supposing that it be; supposing that there be a granular, or a fatty, or a waxy, or a fibroid change. Is the treatment to be altered? I do not think that it can be materially modified except in the rather steadier use of stimulus; yet we will not obtain the same result from digitalis or kindred agents, and arsenic or strychnia is always worthy of trial. These are difficult cases to treat, and difficult cases to recognize. The age; the history, which shows a likelihood of fatty or other degeneration; the aspect of the patient; and the very fact that the heart muscle does not seem to respond to cardiac tonics, give us a clew to the true character of the affection. Neither the sphygmograph nor the cardiograph helps us much in the recognition.

We have been considering heart complaints, and they are the most common, in which sooner or later the compensation is defective, and the heart has to be sustained. But there are cases, already alluded to, in which this never happens, in which no interference is required, in which

the patient, if patient he can be called, has a heart quite sufficient for the ordinary purposes of life. It gives him no uneasiness, and, even if aware of his cardiac malady, its existence ceases to trouble him. These are especially cases of aortic disease, narrowing or regurgitation, particularly the former, with marked, but not excessive hypertrophy. Secondary results of the cardiac affection are not seen; though, as is fully recognized, there is greater tendency to sudden death, and violent exertion must be avoided. Yet I have known persons having these aortic maladies distinguished in pursuits with constant strain; one, an officer of many campaigns; the other, a most laborious physician; the third, the captain of an athletic team at a college proud of its athletic eminence; and not one is aware of being the worse for exertion, suffering neither pain nor shortness of breath. Two have lived over twenty years since I have been cognizant of their malady; they do nothing to counteract its effect, except leading a very temperate life.

Yet another class of cases presents excessive muscular growth, and cavities that have but moderately increased. This state is more often met with in aortic affections, particularly regurgitation; but it may also happen in mitral regurgitation, with or without coexisting aortic disease. The impulse is extended, forcible, and forcible out of proportion to the cardiac percussion dulness; there is often throbbing of the vessels of the neck, dull headache, tension in the pulse, and a feeling of constriction in the chest. Aconite is preëminently the remedy; it diminishes the blood pressure in the arterial system and gives great relief. I usually employ two drops of the tincture, every fourth or sixth hour, for the first few days of the treatment, and then only twice a day; or give one drop every third hour until an effect on the force of impulse and pulse is produced, and keep up this effect with a drop dose, two or three times a day, for several weeks, intermitting the treatment, and resuming it from time to time. *Veratrum viride* has similar applicability; it is, however, more apt to nauseate. But I have often had the happiest results from a combination of one-drop doses of aconite tincture with three of tincture of *veratrum viride*, and seven of tincture of ginger. It is an admirable sedative, and does not sicken.

Summing up, then, the treatment of valvular affections of the heart as they present themselves ordinarily, and basing it chiefly on the condition of the cardiac muscle and of the cavities, we find practically three groups:

Cases in which no special treatment is required.

Cases in which excessive growth and strong action call for aconite or *veratrum viride*.

Cases in which, either early or late, and with or without increased muscle, the heart falters and needs support, and for which *digitalis*, used differently according to varying indications, is the principal remedy.

This line of treatment is held to independently of the exact valve affection. It requires tact and experience to adjust it to the individual case. But when adjusted, the results are excellent.

I turn now to the other points laid down at the beginning of this paper, which are to guide our therapeutics. They will not long detain us; for they are of far less importance than the one just considered. The rhythm of the heart, its regularity or irregularity, has, indeed, been already alluded to in connection with the state of the cardiac muscle and cavities. Still there are cases, especially of mitral narrowing, in which the extreme irregularity presents a striking feature, and in which the question naturally arises, whether we cannot do something special to remedy so threatening a condition. They are mostly cases with imperfect or weakening compensation, and, therefore, to be benefited by digitalis and remedies of that class. Yet, as an adjunct to this treatment, belladonna may be advantageously employed, and pushed to its constitutional effect. From belladonna alone I have not seen any marked results as a cardiac tonic; but, without depending entirely on it, I know it to be valuable for the relief of irregular action.

The condition of the arteries and veins and of the capillary system furnishes an indication for treatment which is apt to be overlooked. Attention is paid to the veins and to their turgescence in instances of dilated right heart and cardiac dropsy. But there is the equally important state of the arteries, of the arterioles and capillaries, and the appearance of the skin and the network of fine vessels in it, by which we can judge of the more minute circulation. Now, we must remember that the very remedy we use most in cardiac disease, digitalis, contracts the arteries and arterioles, and the indications are often to get with increased cardiac power a free flow in the vessels without resistance from them. No remedy does this; and a certain remedy of the kind is greatly needed. It is claimed that strophanthus has this valuable property, that it is a cardiac tonic which does not also contract the bloodvessels; but this is not proved—indeed, recent researches, such as those of Bahadurji,¹ suggest the contrary. Still, the evidence is in favor of strophanthus contracting the vessels to a much less degree than digitalis. Nitroglycerine and the nitrites produce rapid and great dilatation of the vessels, but have, I think, very little effect on the muscular power of the heart. Belladonna and atropia in decided doses have somewhat the same action

¹ British Medical Journal, Sept. 1887; also comments on his researches by H. C. Wood (Therapeutics, seventh edition, 1888.) Lauder Brunton (Pharmacology, third edition, 1883) speaks of strophanthus as not producing "so marked a contraction" of arterioles as digitalis. Purdy's observations (Chicago Med. Journ. and Exam., March, 1887) lead him to the conclusion that strophanthus acts only in large doses upon the vessels. Zerner and A. Löw (Wien. med. Wochenschr., xxx. 26-30, 1887) give many pulse-tracings and arrive at much the same results as those originally published by Frazer. They found strophanthus to cause a more energetic systole and longer diastole, without producing contraction of vessels. The whole subject needs further investigation.

as nitroglycerine, less on the vessels, rather more on the heart. Why can we not learn to combine nitroglycerine or atropia with digitalis in right proportions, and obtain, where we so wish it, full cardiac power without resisting vessels?

There is, I am certain, a rich field here for accurate research. While waiting for an agent which by itself has the needed qualities, we can use the remedies we possess to modify each other; and in the class of cases with sluggish capillary circulation we may also make use of gentle massage.

The probable length of existence of the malady and its likely cause must be taken into account in treatment; the former, because it gives us an idea how actively the process of compensatory hypertrophy is going on, and whether it had better be stimulated or checked. Besides, it bears on the point whether the original malady is so far off that it is still worth while treating. In this respect, then, the consideration of the duration and of the cause of the valvular lesion merges.

Now, let us consider this question of cause. It is needless to repeat all the possible causes of valvular mischief; the most prominent certainly is rheumatism, next come the degenerative changes, as of advancing years, of Bright's disease. When rheumatic, can we treat it specially? My experience says distinctly not. We possess no remedies to influence the results of the rheumatic endocarditis, when the acute stage is fairly over. Indeed, if it be three months after the attack, I believe the attempt useless. Before this, it may be worth while to try a course of iodides, of blisters, of rest. It will generally fail; but I have twice seen loud murmurs, left after rheumatism, thus disappear, and, I believe, the valve restored. When the attack dates some time back, no good results come from attempts at absorption. I have several times watched the effects of long-continued, faithfully carried out trials. One, in the person of a middle-aged physician who was determined to get rid of a rheumatic mitral disease with a marked systolic apex murmur, and no signs of pulmonary congestion. He kept himself saturated with iodides for a year, only stopping for short intervals, when sickened by the drug. At the end of a year the murmur was just as distinct as before, and his general health certainly not so good; the extent of hypertrophy appeared unchanged. I watched a similar case for eleven months; the result was the same. Yet it is well in instances which have clearly a rheumatic origin, to guard against the possibility of the recurrence of the rheumatism, since this may lead to an aggravation of the valve mischief; it is well at the first sign of a rheumatic outbreak to insist on rest and to administer freely alkalis, or the salicylates. At all times, too, ought the food, the clothing, and life generally, to be regulated as it would be in any one liable to rheumatism. The same line of thought, though not with exactly the same agents, will

indicate to us how to manage the heart disease of the gouty, with the occasional appearance of large quantities of lithic acid in the urine.

With reference to atheromatous disease, with its pulse so often of higher tension than the cardiac condition would indicate, we can, with our present knowledge, do nothing for the gradual decay which is going on. Acids have been suggested, but acids will not answer. Doubtless, future therapeutics will include solvents and other means to influence degenerative states, and they will be used in cardiac affections. Viewed now, we can only say that this kind of cases requires a more constant though varied, cardiac support than the recognizable organic mischief calls for.

There is, however, a form of valvular affection of the heart in which we can treat the malady according to its cause with the happiest results; it is the form which I have called functional valvular disorder. Since the publication of my paper on the subject,¹ I have had many more cases of it, and have learned to remedy the perverted valve action and its consequences in a number of instances which at first appeared to be incurable organic valvular disease. This was accomplished by rest, followed by graduated exercise, by careful diet, and by the persistent use of small doses of digitalis, or, in some later cases, of adonidine. The cases were chiefly mitral regurgitant affections; two of them distinctly followed heart strain from excessive rowing. They were not in any sense anæmic. In two in which the treatment was concluded within the last year, and one of which had considerable pulmonary engorgement, the valve has so completely returned to its normal action that no murmur could be detected by experts who saw them subsequently.

It seems almost needless to speak of attention to the general health, as an indication for treatment, were it not that some important considerations are involved. In the first place, it is evident that the better state we keep the blood in, the better the heart muscle will be nourished, the less likely to undergo degeneration. This is, perhaps, the reason why iron is so often thought of as a routine practice in valvular affections. Yet it is, as a rule, not a good remedy; it constipates, produces headache, a full feeling about the heart, and is badly digested. It ought only to be given in cases clearly anæmic, or after recovery from an acute malady. Food is generally much more important than iron. It should be nutritious, easily assimilated, but never taken in large quantities at a time. Strong broths, fish, eggs, meats, poultry and game, and such green vegetables and fruit as are readily digested must form the basis of the food-supply; and those who like milk, or have no distaste for digested milk, can take either in moderate amounts to advantage. There is no

¹ AMERICAN JOURNAL OF THE MEDICAL SCIENCES, July, 1899.

objection to the use of coffee and tea if not excessive, and small quantities of alcoholic drinks are rather beneficial than otherwise in inadequate or faltering compensation. Except for gouty persons, we may hold to the axiom, that it is quite right to allow alcohol in cases to which we think digitalis applicable. The light wines are well borne and apt to be of service. Champagne is bad for most patients. I have known even a single glass produce violent palpitation, cardiac distress, and oppression. The dress should be loose-fitting and warm; and, owing to the readiness with which laryngeal and bronchial catarrhs arise, exposure to cold and damp should be avoided.

With reference to exercise, it is difficult to lay down rules. Of course, all violent exercise, like all sudden efforts, is to be avoided; and, in the cases with rapid circulation, I believe in considerable repose. But where the heart is not acting too violently, nor too rapidly, there is no doubt that regulated muscular exercise, especially on foot, is of use, as it sustains the nutrition of the organ. It must be kept within the limits of not producing shortness of breath, and ought not to be undertaken in the face of a strong wind. Of the hill-climbing and mountain-climbing plan of treatment, recently advocated by Oertel, I have had no experience. What I have seen of the difficulty people with valvular heart affections have in living in mountainous regions, as in Colorado, does not incline me favorably to the plan. Keeping the nervous system as quiet as possible and being cheerful, are undoubtedly great aids in holding the cardiac malady at bay. Nervous people with valvular disease do badly; their excitement tells on the heart. Worry is even worse. Absence of worry means generally long life; worry, short life.

The sixth condition I laid down for the treatment of valvular disease relates to the secondary results of the cardiac affection. With these it may be proper to consider some special heart symptoms which are at times of unusual prominence. But the attacks of palpitation and cardiac pain; the tendency to syncope; the dyspnoea; the dropsies; the affection of the kidneys; the headache and vertigo; the insomnia; the plugs that are washed into brain, or lung, or spleen, or liver; the hepatic engorgement; the catarrhal affections of stomach and upper bowel, furnish so many morbid states that it would be impossible here to consider them, or their management. I will only select for discussion a few, and try to make clear some points which I have learned by experience.

As regards palpitation in cases in which it is marked, we are often met by this difficulty, that it gives a fictitious strength to the impulse. We ask ourselves, whether it would not be better to treat such cases by sedatives? Yet the pulse, though rapid, does not correspond in strength the heart is really weak, laboring; and we shall rarely be wrong in

meeting the symptoms with ammonia, with brandy, and with similar agents. Then we notice a class of cases in which palpitation is not uncommon, but in which the action of the heart is sometimes rapid, at other times slow, and is very much influenced by the least fatigue. This may happen after some illness, other than cardiac, or after mental anxiety. There is a functional cardiac disorder, superadded to the organic malady, which may, indeed, show fair compensation, and really be but slight. Great attention to the general health, with rest, will get rid of the added marked functional disturbance; and occasional doses of bromide added to digitalis, if this be not otherwise contra-indicated, a course of cannabis indica, or of arsenic, will show good results. From opium, too, given in small amounts, we are apt to observe a happy influence.

In yet another class of cases we have a constant sense of cardiac uneasiness or actual pain as a striking symptom. In such the iodides usually do good, also wearing a plaster over the heart. It may be that plasters, as Lauder Brunton suggests, act simply by pressure; but, at all events, they act. In instances in which there is decided force to the impulse, I often order aconite plasters, of half strength; in other instances, belladonna plasters; and the relief they give makes the patients very willing to repeat them. But the best of all remedies is nitro-glycerine. It is most unfortunate that this valuable agent, which lessens blood pressure and diminishes the resistance the heart has to overcome, and which, therefore, ought to have so large a field of usefulness in valvular disease of the heart, is so repugnant to many patients, and produces headache so readily that it has to be discontinued. Yet those who can take it reap the benefit. I have refrained from quoting cases in detail, but I cannot forego citing two striking instances of its favorable use, and in one of long continuance of its administration.

Mr. A., seventy-one years of age, was obliged to retire from the management of a large business on account of shortness of breath and constant dull pain in the cardiac region. He was also much annoyed by dyspeptic symptoms. He presented a mitral incompetency with only slight compensatory hypertrophy; indeed, the impulse was not strong. He had used many remedies, and did not tolerate digitalis well on account of its disturbing the stomach. Drop doses of nitro-glycerine, increased to two drops three times a day, removed in a few weeks the cardiac pain, stopped the intermittent action of the heart, and did the dyspnoea more good than anything else. He was able to resume his occupation, reverting to the remedy as he thought he needed it.

Mrs. E., fifty-five years of age, had a terrible record with reference to disease of the heart. Her grandfather and father had both been extremely gouty, and there was reason to think had had disease of the heart. Two sisters had died of valvular disease. She herself had had swollen feet when a young woman, and other evidences of gout. But these subsided; and, as years passed by, the large joints and the muscles

troubled her, and she looked upon herself as rheumatic rather than as gouty. Yet she never had an acute attack of rheumatism. She was fond of travelling, and I did not see her at times for long periods. But five years before her death I am certain that she had no cardiac malady; for, knowing the history of the family, I examined her with reference to this point. She went to Europe two years subsequently, and about that time began to notice that she could not go up hill without panting.

While at Homburg, about eighteen months before her return home, she had an attack of angina, for which nitro-glycerine was ordered, with relief. A subsequent and more severe seizure six months afterward at a railroad station, after some exertion, caused her to take the remedy regularly; and she soon learned that, if she persisted in its use, she had neither attacks of angina nor the steady cardiac pain from which she suffered. She kept on with the medicine, in the shape of tablets of $\frac{1}{300}$ th of a grain, twice daily, rarely oftener, for a year, stopping it only for short periods. She had mitral regurgitation with very moderate hypertrophy; tendency to pulmonary congestion and to bronchial catarrh, scanty urine with some albumen, never exceeding one-fourth of the fluid in the test-tube, sleeplessness, and swelling of hands and feet. The heart was made more regular, and the dropsy speedily relieved by digitalis and acetate of potassium. Indeed, it was kept away by this, with the occasional substitution of caffeine. Under these remedies alone, however, the cardiac pain began to return; toward the close the weakening heart had to be sustained by the free use of brandy. For her oppression and miserable nights, dry cupping and Hoffmann's anodyne proved at first of service; she had, finally, to take full doses of morphia. The tablets of nitro-glycerine were not abandoned until near the end. She died comatose.

One of the most important of the secondary results of the cardiac malady is the diminution of the quantity of the urine. Not nearly enough attention is paid to this point, and, unless the urine be albuminous, it is not thought to be of any service to take its state particularly into account; yet it is very valuable to do so. Scanty urine, often of higher specific gravity than normal and full of urates, will go hand in hand with cardiac pains, with headache, and with dyspnoea. It is well known that the shortness of breath in valvular disease does not always receive an adequate explanation in the physical condition of the lungs. The explanation may be partly found in the concentrated condition of the urine, and, very likely, in some of its retained elements producing the disturbance in the capillaries of the lung or the respiratory centre. At all events, from a practical point of view, we observe that diuretics, in the condition alluded to, are most valuable in relieving the pulmonary distress and the other symptoms. Of great service is caffeine, than which, indeed, there is no better diuretic in cardiac cases, especially those with weak heart and concentrated urine, and which, also, up to a certain point has the properties of digitalis as a cardiac tonic. The dose generally sufficient is two grains of the citrate given every third hour; but it may be given in five grain doses, or more. Caffeine itself is

advantageously administered, as was, I think, first suggested by Tanret, in combination with benzoate of sodium in solution. I have found a grain of each of these drugs mixed with syrup of orange flowers, or of orange-peel, and water, each half a drachm, a good formula. Some of the new salts which are very soluble, such as the *cinnamate* or the *phtalate*, are also easily given. The former of these, as the *sodio-cinnamate*, contains sixty-two per cent. of caffeine; the latter fifty-six per cent., and is soluble in five parts of water. Both are adapted to hypodermic use; so is the *sodio-salicylate*.

Dyspeptic symptoms, due to a catarrhal condition of the stomach and bowel, are very common in valvular diseases, especially in those of the mitral and tricuspid valves. They may or may not be associated with an engorged, torpid liver; they may or may not be in the form of painful digestion. In either case the failing appetite is apt to be treated by tonics, often by iron. These are not, in my judgment, the right remedies. I believe purgatives are; they strike directly at the morbid state, and subsequently some bitter, or small doses of *nux vomica*, will restore the desire for food. Purgatives are not given as often as they ought to be in valvular disease of the heart. There is the fear of weakening the patient; which they do not, if not abused. They not only remedy the stagnation in the portal circle and remove the catarrhal condition, but they lessen the liability to dropsy. The old treatment of an occasional mercurial was good treatment; and calomel may be beneficial in other ways in disease of the heart, especially those with dropsical tendencies, than through its diuretic action, which is now receiving so much attention.

It is impossible in examining the treatment of diseases of the heart, whether of the disease itself or of its consequences, not to be struck with the important part *digitalis* plays. And the question naturally arises, whether any of the newer remedies can take its place? I have tried them all, and I believe there is not one which is as trustworthy, as valuable; not one is at the same time so good a cardiac tonic and a diuretic. But undoubtedly *digitalis* cannot be kept up uninterruptedly, and it is apt to produce, after a time, derangement of the digestive organs. Some cannot take it at all; and as in any form of tonic, so with this cardiac tonic, we get better results by occasional change. I hold caffeine, *strophanthus*, and *adonidine* to be the best substitutes. I have already spoken of caffeine. From *adonidine* I have witnessed, in one-tenth to one-fifth of a grain doses three times a day, some admirable results; but more in cases of functional than of valvular disease of the heart. Yet even here I have known it to act as an excellent heart regulator. So does *strophanthus*, which I have, moreover, often seen strikingly influence irregularity, and dyspnoea. Its action is very rapid, but not so permanent as that of *digitalis*, and though much is

claimed for it as a diuretic, its influence in this respect is inferior both to digitalis and to caffeine. It would seem specially applicable to cases with defective power and high arterial tension, as sometimes met with in the heart lesions of Bright's disease; but from actual experience I am not yet certain on this point. Convallaria has, on the whole, disappointed me in the treatment of valvular disease, though I think it is of value in palpitation of the heart and in other forms of functional disorder. Cocaine answers very well in some cases; it is certainly both a cardiac stimulant and tonic and not devoid of diuretic powers.

A remedy which I am using now a great deal is chloride of barium. Since I became acquainted, through the investigations of Boehm and of Bartholow, with its physiological action and learned that in this it resembles digitalis, I have prescribed it repeatedly in valvular affections. I find it both a general tonic and a cardiac tonic, a remedy that increases the tone in the bloodvessels, a fairly good diuretic, and one that can be taken for a long time without disordering the stomach. It may be even, as Kobert¹ shows, administered hypodermically. The dose in which I have given it by the mouth is one-tenth of a grain in pill, three or four times daily; a rather larger dose is, however, admissible. In very decided amounts it is apt to produce diarrhœa. As Bartholow points out, it has many incompatibles, and it is best not to give it in combination. Among its properties I have noted that it lessens cardiac pain. I learned this from the case of an elderly gentleman with a mitral lesion, regurgitation with some narrowing and defective compensation, in whose case pain or constant cardiac uneasiness was a prominent feature. Digitalis did him in this respect no good and was losing its effect in steadying the irregular heart. Chloride of barium in one-tenth of a grain doses improved him greatly; the oppression was relieved, the heart became more regular, the cardiac distress disappeared. He has been more than once benefited for a long time by a three weeks' course of the remedy.

I must not bring this paper to a conclusion without mentioning a point of which I know the great value,—to make periodical examination of persons affected with valvular disease. I am not speaking of those in whom serious symptoms call for constant supervision; rather of those who, under our advice, take little or no medicine. In them, too, it is true that the heart of to-day may not be the heart of a month hence. Yet they are the ones chiefly in whom beginning changes can be most readily met, and whose lives, with the aid of treatment when necessary, can be greatly prolonged. Let them be made aware of the importance of skilled supervision. It will not mean needless interference; it will mean judgment as to when interference is really helpful.

¹ Therapeutic Gazette, June, 1887.

In valvular disease, as in other instances of disease of the heart, advance in knowledge is demonstrating how the arrow in the side can be kept from being fatal.

THREE SUCCESSFUL CASES OF CEREBRAL SURGERY.

INCLUDING (1) THE REMOVAL OF A LARGE INTRACRANIAL FIBROMA;
(2) EXSECTION OF DAMAGED BRAIN TISSUE; AND (3) EXSECTION
OF THE CEREBRAL CENTRE FOR THE LEFT HAND;

WITH REMARKS ON THE GENERAL TECHNIQUE OF SUCH OPERATIONS.¹

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(Concluded from page 357.)

CASE III. *Epilepsy of uncertain origin; attacks beginning in left hand; excision of cerebral centre for left wrist and hand; recovery in eight days; epilepsy improving to date.*—W. B., of Maryland, aged twenty; American; clerk in a country store. His best and present weight is one hundred and thirty pounds; five feet five inches in height. The patient is a hearty young man, having had all the diseases of childhood except scarlet fever. At the age of three years he had spasms for six hours from indigestion. He had no subsequent attacks.

At the age of thirteen, he rose one morning at four o'clock to make the fire, and after doing so fell asleep in a chair, from which he fell, and he thinks he struck his head on the stove. He was unable to fix the location of the blow, as there was no cut or bruise on the head. On waking up he found himself on the floor dazed and suffering with headache, which continued all day, but was not sufficient to keep him in bed. His history is quite imperfect in detail. Ever since this accident (?) he has had epileptic attacks, always preceded by dizziness. Stooping often brings one on, he and his family say (though he could never accomplish this before me). He has never had a hurt in consequence of these attacks. Sometimes they occur in the night. He eats and sleeps well. His friends state that the attacks begin with a fixed or a wild look from the eyes, and when engaged in any action, such as tying a bundle with twine, he would continue the action for an unreasonable time, till he would come out of the attack and resume his work as usual. His head sometimes turned to one side and sometimes to the other before any other part of the body became affected, then the arms would begin to jerk, then the convulsion would become general. The fits would last about two or three minutes, and would be characterized by very marked convulsive movements.

Present condition, April 23, 1888: *Head.* When the head was shaved two small scars were seen, one from a recent blow and one unaccounted for; neither of them seemed important. On the right temple was a distinct furrow, which could be traced over the temporal muscle into the

¹ Read before the American Surgical Association, September 18, 1888.

sulci exposed were about an inch deep. This, therefore, gave no clew to the point desired. Depressing the brain exposed a further area under the edge of the bone but gave no information of moment. An application of the cyrtometer (disinfected) was then made to redetermine the position of the fissure of Rolando. This ran in the middle of the three convolutions before mentioned (Fig. 9). In order to determine the seat of the hand centre a faradic battery was then used. The ends of the wire were wrapped in borated cotton dipped in bichloride solution. Stimulating the two posterior convolutions gave no results, even when the current was perfectly perceptible to my hands and contracted my muscles. On touching, however, the anterior one of the three convolutions the hand instantly moved, the wrist (as observed by Morris J. Lewis) moving in extension in the midline and to the ulnar side at different touches, and the fingers being extended and separated. Above this centre were the shoulder and elbow centres, and below the face centre, as described further on.

FIG. 9.

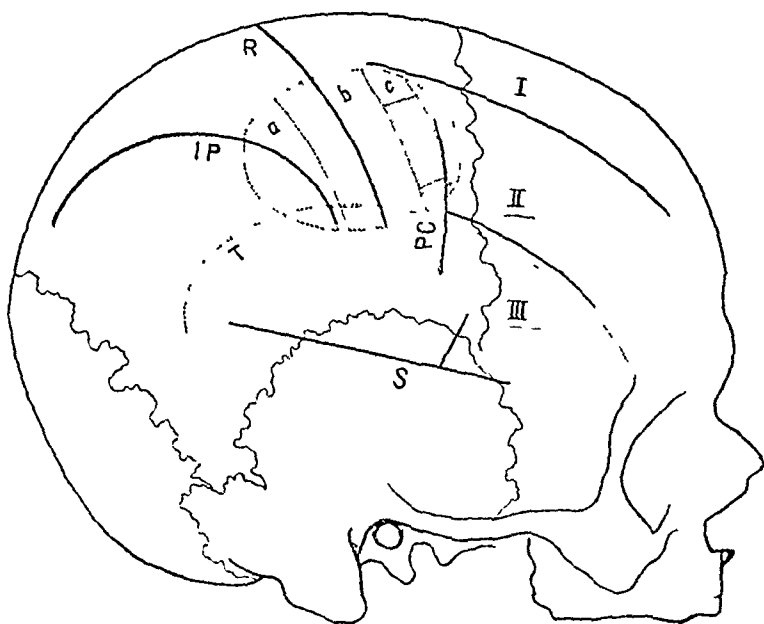


Diagram of skull. (Drawn by Dr. J. M. Taylor.)

S, Fissure of Sylvius R, Fissure of Rolando. IP, Intraparietal sulcus. PC, Precentral sulcus. T, Temporal ridge. I, II, III, the first, second, and third frontal convolutions. The dotted line represents the opening in the skull, a, b, c, are the three convolutions first exposed in the trephine opening. The shaded lines represent the portion excised.

The opening in the skull was now enlarged, chiefly forward and downward, till it measured two and a half inches antero-posteriorly by two and a quarter inches vertically, so as to disclose this convolution (*c*) to a larger extent. From the point of application of the centre pin (an eighth of an inch behind the fissure of Rolando and one inch above the temporal ridge) the opening extended forward one and three-eighths inches, backward one and one-eighth inches, upward one inch, and downward one and a quarter inches. In enlarging the opening forward I

invaded the territory covered by the flap of the exploratory operation a month before. Under this area the dura was noticeably more adherent to the bone than elsewhere.

The anterior border of this convolution (Fig. 9, *c*) was marked by a fissure nearly parallel with the other two. The portion of the convolution (*c*) containing the hand-centre, about one and a quarter inches long, as ascertained by the battery, was then incised vertically above and below with a knife, the lower incision being three-eighths of an inch above the temporal ridge. The sulci in front of and behind this convolution had been previously freely opened. The lower end of the portion to be taken away was then lifted and the loosened convolution was cut away from the underlying brain substance with a pair of scissors. While this was being done the hand was watched, but no movement was perceived. The wires of the battery were now again applied, while Dr. Lewis again observed. At the remaining part of the convolution at the upper margin of the excised portion, movements of the left elbow (flexion and extension) and shoulder, especially of the latter, which was raised and abducted, were noticed. Touching the part of this convolution remaining at the lower border of the excised portion, produced an upward movement of the whole left face, no one muscle being noticeable in isolated contraction. The platysma was not contracted nor was the angle of the mouth drawn downward. Touching the white matter at the bottom of the excision produced again the movements of the hand. It was deemed, therefore, certain that all the hand-centre had been removed. It was noticed that the convolution immediately behind the part excised was somewhat bruised in the efforts to open the sulci on that border.

Dr. Lewis now took a photograph of the exposed brain. Comparatively little trouble had been experienced from hemorrhage. An Esmarch bandage had been applied to the scalp, but it, probably, was not drawn tight enough, as a few of the vessels bled somewhat freely. These were caught with hemostatic forceps and the bandage was removed. It had been passed only twice around the head. In the brain itself the large vessels were necessarily disturbed to a considerable extent and bled quite freely. Cocaine (four per cent.) and hot water did good service, but for the larger vessels ligation answered best. This was done with Kocher catgut. The tying had to be extremely gentle, with even pulling of the two ends, else the vessels would give way. The dura mater was now replaced and sewed with fine chromic catgut, two bundles of horsehair having been placed underneath it. The final oozing was so slight that it was not deemed necessary to put a drainage tube under the dura. The disk of bone and some fifteen pieces removed by the rongeur forceps were now replaced on the dura. Two bundles of horsehair were placed between the bone and the scalp and also a small rubber drainage tube posteriorly. The scalp wound was then closed by fifteen chromic catgut sutures. An abundant dry dressing of corrosive sublimate, rubber dam, and a bandage completed the dressing. The operation had lasted about an hour and a quarter. When put to bed the condition of the patient was satisfactory. As soon as he recovered from the ether he was quite violent in his restlessness. Soon afterward he had an epileptic attack ushered in by staring eyes, then the left leg was crossed over in front of the right and the body became rigid. In about a minute the fit was over. No movement of the left hand or face occurred. Immediately after the operation the left hand was found to be paralyzed as to all movements

both of fingers and wrist. The elbow was paretic, the shoulder and face perfectly unaffected.

At 6 P. M. the dressing was changed as it was saturated to the margin from moderate bleeding. Again at 3.30 A. M. May 31st, the wound was redressed for the same reason. The oozing at this dressing was much more serous and less bloody. At 12.30 A. M. May 31st he had another epileptic attack lasting about a minute precisely similar to the last one, except that he rolled over on his abdomen.

31st, 8 A. M. (first day after the operation). The patient has been perfectly conscious ever since he recovered from the ether. The only physical change noted was the paralysis of the left hand, which was unaltered. The pupils were unaffected. He slept some during the night, but, on the whole, the night was restless and disturbed. A catheter was used both last night and this morning. The urine was normal in quantity and quality. He complains of discomfort, but states that he has no pain of any moment. He was allowed nothing but ice during the night, but this morning, as he was moderately hungry, he was given some milk. Some rather violent retching followed the operation but it ceased later in the evening. The wound was redressed, as the dressing was slightly moistened with bloody serum, and the drainage tube removed. In the left hand each finger was recognized correctly, but the two points of the æsthesiometer were recognized as only one when so far separated as the entire length of the finger or the entire breadth of the hand. The right hand, however, is but little better than this, as the two points are recognized on the fingers as one at two-thirds the length of the fingers apart and about the same crosswise. His mental condition is such, however, that I do not think this test reliable, saving to show that the left hand, in a general way, is not so sensitive as the right.

June 2 (third day). The wound was redressed although the dressing was scarcely stained. Five out of the fifteen sutures were removed, as the wound was sealed throughout its entire length, saving where the drainage had been. All the horsehairs but six were removed; two of these going under the dura and four under the scalp only. An enema to-day evacuated the bowels satisfactorily. His urine is evacuated only by catheter twice a day. The bladder seems to have lost its expulsive force. When the catheter is inserted no urine flows except upon pressure over the bladder. The amount is small—twelve ounces in twenty-four hours. Its character is normal.

6th (seventh day). In the last four days his temperature has fluctuated between normal and 100°; the latter occurring at night. His general condition could not be more satisfactory; his appetite is good; his head feels perfectly clear; and he has had no pain. On the fourth day the wound was redressed and all the stitches removed. The wound was entirely healed. A little œdema exists in the centre of the flap, and pressure on it gives a sensation of resistance almost equal to that over the rest of the skull. Up to last night the catheter had to be used, excepting that he was able to pass his water when he took an enema; but since last night he has passed it voluntarily though very slowly and with little force. He has been up and dressed since the fifth day after the operation. He is anxious to go down stairs to his meals, but on account of the slight rise in his temperature I have not deemed it prudent. On June 3d he had two attacks characterized as before. On June 4th he

had one more. The attacks are evidently becoming very much lighter and less frequent. Yesterday and the day before he had two aborted attacks. He, himself, is most annoyed by his left hand which is still paralyzed, though twice there have been slight involuntary movements in it. The elbow has entirely recovered from its slight paresis.

7th (eighth day). As his temperature had fallen to normal and he was anxious to go out, I allowed him to walk to a barber shop and get shaved. The left hand was still paralyzed.

The attacks after the second operation, as after the first, were increased in frequency, but they were not so severe, and they now diminished quite rapidly in severity, frequency, and duration, rarely exceeding one or two minutes in length. At present in an attack the left hand does not move, the eyes are staring, his right arm, legs and body stiffened, but little muscular movement; the mouth drawn to the right and the head turns to the left.

18th. Dr. W. J. Taylor reported his temperature as follows: In the right palm 37° C., the left hand 37.5° C., the right side of the head 37.7° C., and left side of head 37° C.

28th. I examined him carefully to-day, as he was to return home. His skull is perfectly firm, as much so on one side as the other, with very slight, if any, irregularity of surface where the pieces of bone were replaced. Pressure produces no yielding or pain. Except for the two scars one would not know that his skull had been opened. The fits have become greatly diminished, occurring now only once in two to four or five days, and then only of momentary character, practically *petit mal*. There is no convulsive movement whatever, and his mental condition is more satisfactory, inasmuch as he is more cheerful and communicative, and far less morose and despondent than when he first came under my care. His hand and wrist are still as before, but he has ceased to carry his arm in a sling as he did for the first three weeks after the operation.

I made the following measurements: Right biceps ten and one-eighth inches, left nine and three-quarters inches, right forearm two and one-half inches below the olecranon ten and one-quarter inches, and the left nine and three-quarters inches. Unfortunately I did not make any measurements of the same points before operation. Whether this difference is due to wasting or is simply a natural difference in his case of a smaller, because less used left arm I am unable to say.

Electrical responses of all muscles of the arm, forearm, and hand are equal and prompt on the two sides, both by faradic and by constant current. Unfortunately circumstances made it impossible for me to determine whether reactions of degeneration were present or not.

July 20. He writes that motion is beginning to return in the left hand.

Dr. George Dock examined the specimens of brain tissue and reports as follows. In all three cases reported in this paper, I may add, the specimens were placed in Müller's fluid the instant they were removed.

"The specimen was received in Müller's fluid on the day of the operation and examined in less than twenty hours after removal. It proved to be part of a convulsion cut off at a right angle at one (lower?) end, at an angle of about 45 degrees to the surface at the other, and with a smooth base. It measured, when fresh, 32 millimetres in greatest length, 10 millimetres in thickness, and 18 millimetres in depth. The surface, from which the membranes had been removed, showed nothing unusual. In making a series of sections of an average thickness of 5 millimetres,

a hemorrhagic spot, 3 millimetres in diameter, was found, in the lower third, just below the cortex. Examined fresh, in Müller's fluid, this showed: 1, blood corpuscles of normal color and outline; 2, multipolar cells, with no evident alternations; 3, nerve-fibres, with and without double contours, showing no swelling of the myelin and no apparent loss of it; 4, bloodvessels. The smallest of these showed numerous highly glistening spots in their walls, the larger ones no alteration in structure.

"Having been placed in the hardening fluid so promptly the specimen was soon ready for staining. It was stained by both ammonia-carminé and Weigert's method, the latter giving very satisfactory results. Minute extravasations of blood were found in all parts. Most of these are along the course of small vessels, some confined within the lymph-sheaths, others of irregular shape among the fibres of the white matter and in the cortex. There are no blood-pigment masses and no diffused staining. The large hemorrhage mentioned shows blood corpuscles with well-preserved nerve-fibres, free myelin in small globules and fine granular material. In sections from this part of the specimen there is marked dilatation of the perivascular lymph-spaces. Some of these attain a diameter of not quite one millimetre, being from two to three times as wide as their main vessels. The capillary in them is often distended and the mesh-work, plainly visible, encloses a few corpuscles; in rare cases, however, a large number. The vessels appear normal here as elsewhere. The nerve-fibres are intact, as a rule. In a very few places, in small areas, they do not appear. These areas are in the extreme outer layer just beneath the surface, and when found I have also found small hemorrhages beneath them. The main bundle of white matter shows no diminution in size or failure of reaction to stains. The cortical layer is unchanged, save for the hemorrhages. The ganglion-cells are present in all parts of this layer. Some of them are very pale, but none show atrophic or inflammatory changes. Many of them lie in spaces rather larger than normal, which may be due to an œdema of the space, or to the action of the hardening fluid."

REMARKS.—The first operation, in which the skull was not injured and the flap readhered to the skull and the wound healed without inflammation, teaches one important lesson—the marked lesion within the cranium that may follow a slight traumatism on the exterior. As I extended the bony opening at the second operation I wondered why, all at once, the dura became so adherent to the bone. In a moment I observed that this began just where I encroached on the area under the first flap. As injuries increase in severity their intracranial consequences must increase *pari passu*, so that we can easily understand how severe blows, even without fracture, may be followed by meningitis, or abscess, or, as in Case I., by a neoplasm.¹ Macewen (*Med. News*, Aug. 18, 1888) alludes to this and to the adhesion of the brain to the bone very happily as "anchoring the brain" and points out its deleterious results. I can hardly, however, concur in his inference that a higher

¹ Cf. Horsley, *AMER. JOURN. MED. SCI.*, April, 1887, p. 335, Case VII

temperature at the site of the injury is a contra-indication to surgical interference.

The moment the brain was exposed the marked cedema was the one thing noticed. It extended over the entire area exposed. Over the convolutions the cedematous layer was about one-eighth of an inch thick, and over the sulci three-sixteenths of an inch or more, so that the sulci were at first very hazily seen. Whether this cedema was the essential lesion or not cannot be determined, but, though the brain was carefully examined by touch (in the sulci to the depth of one inch), no evidence of any tumor or other lesion that might cause the cedema was found. The examination of the excised brain by Dr. Dock shows that this cedema was not merely superficial, but extended into the brain tissue throughout all the excised part, and doubtless beyond, how far beyond we can only guess. Besides this, Dr. Dock found numerous hemorrhages, which he believes to be recent, and probably due to the necessary traumatism in separating this convolution from its neighbors and excising it. During the operation I noticed that the convolution back of it showed marked evidences of bruising, though, of course, the manipulation was as gentle as possible. Whether these hemorrhages would have occurred had the vessels been entirely healthy may be easily a question.

But the most interesting question is, as to the location of the centre. I sought for this in the post-Rolandic¹ convolution just below its middle. (Centres (a) (b) (c) in Ferrier's plates. See Gray's *Anatomy*, last Am. edition.) There were three convolutions exposed by trephining, and the line for the Rolandic fissure ran in the middle of the central one (Fig. 9, b). The fissures in front of, and behind convolution (b) were of equal depth, and another, also of equal depth, existed in front of convolution (c). On the whole, I am decidedly inclined to think that the sulcus in front of (c) was the precentral or vertical sulcus, the one between (b) and (c) the fissure of Rolando, and the one between (a) and (b) either the beginning of the intraparietal, or, possibly, a retrocentral sulcus. If I am right, the centre for the wrist and fingers which I removed was in the pre-Rolandic gyrus, its lower limit being at three-eighths of an inch above the temporal ridge, and its upper end where it fused with that for the elbow 32 mm. higher up, and the shoulder still higher, while the centre for the upper face was in the same gyrus immediately adjoining the excised portion at its lower end. If the reader will compare Horsley's figures for these centres (Gray's *Anatomy*, last Am. edition, and *AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, April, 1887), he will be struck with the accuracy of their representation. None of the wrist and hand centre existed in convolution (b); whether

¹ I have used the terms "pre- and post-Rolandic," instead of the more common names of these gyri, designedly. The fissure of Rolando is so important and well known that these names are instantly understood, far more so than "anterior central" or "ascending frontal," etc.

any existed in the convolution in front of (c) or not was not tested by the battery, but in view of the complete palsy of the wrist and hand it seems improbable. As one of the few instances¹ in which the results of experiments upon animals have been verified on man it is most important and gratifying, giving us new confidence in this important method of research which has already done so much to make cerebral surgery not only possible, but successful and promises so much more in the future.

The higher temperature² on the right side of the head so long after operation together with the continuance of the fits, may not mean anything discouraging for the future, yet it is in such marked contrast to Case II. that I shall watch it with interest. Probably the œdema will subside slowly. Certainly to date (August 12th), though he has had occasional convulsive seizures and a number of attacks of *petit mal*, yet, on the whole, he shows considerable improvement both as to number and character of the fits, with a decided gain in mental status. By "compensation," it is nearly certain that in time he will regain control of the left hand through the other hand centre, a process already, in fact, beginning.

GENERAL REMARKS ON THE OPERATIVE TECHNIQUE.

My experience in these three cases, as well as assisting at several others, in the new field of cerebral surgery, warrants some general remarks which I trust may prove of value.

1. *Shaving the head.* So important do I regard this that I would consider no diagnosis as assured and no operation warranted that had not been preceded by shaving. The unexpected and unknown scars found have surprised me in other cases, as well as in those here related. Besides this, no reliable mapping on the head of the cerebral fissures and gyri can otherwise be made. These can also be now marked on the scalp by the aniline pencil.

2. *Antisepsis.* Practically, the admirable rules laid down by Horsley were followed, nor can they be too strongly insisted upon. (See details in Case I.) No spray was used during any of the operations, though it had been used all the morning in the room in the first case. It is also especially noteworthy that on the day before I operated on the third case, circumstances made it needful for me to operate on a case of cancer of the colon with a fecal fistula and profuse suppuration. Dr. William J. Taylor assisted me in both operations; and our hands were, of course, saturated with infection. After the bowel case we carefully disinfected them with soap and water, alcohol and bichloride, and several times

¹ Cf. Horsley's paper, l. c., pp. 358, 361, 362, and Macewen, *Med. News*, Aug. 18, 1888.

² The relative temperatures of the two sides of the head before the operation have been unfortunately mislaid.

repeated this during that afternoon and the next morning. No infection followed in the brain case—a most valuable lesson as to antisepsis.

3. *Anæsthesia.* In all three cases ether, and not chloroform, was used, and I saw no reason for any preference for chloroform.

4. *Marking the bone.* Whether to mark the site of a scar or other lesion, or to fix the site of the Rolandic or other fissure of the brain, the nicking of the bone by a gouge, through one or more small incisions in the scalp, is a most useful preliminary to the horseshoe-shaped incision for the flap. As soon as this flap is raised, all landmarks are lost, and one can only “orient” himself by a reapplication of measuring instruments, which probably have to be disinfected, or perhaps cannot be. Moreover, in my first case, it enabled me, as related, to fix accurately the situation of the tumor.

5. *Access to the brain.* The large horseshoe-shaped flap of scalp is infinitely preferable to the old crucial incision. The large trephines now used (one and a half, two, and even two and a half inches) are also a great help, and I think it a rule, almost without exception, that the bony opening should be ample. Bergmann’s opposition to operative interference with large cerebral tumors, on account of the probable consecutive œdema, from want of support by the skull, certainly cannot hold good. In my third case the preëxisting œdema will perhaps find its best relief, indeed, from the operation. The success that has practically followed such operative procedures is its best vindication. Plenty of room, both for observation and for work, should be had. A small opening may defeat the very object for which we operate. A large opening adds no additional danger to the brain, and even if as large as in Case III., the integrity of the skull may be *entirely* restored. The “surgical engine” may be very useful in rapidly increasing the size of the opening, but it should be used by an expert (a dentist if the surgeon himself is not accustomed to its use) lest accidental injury be done to the brain. The chisel is not only needless but dangerous. It is quite surprising, also, how far beyond the limits of the skull opening we can feel and even see. The brain allows of gentle pressure very readily, and the finger can be inserted an inch all around the opening. The incision in the dura should also follow the margin of the bony opening (one-quarter of an inch away) and not be crucial. It may then be replaced and secured by catgut with ease. I have had some trouble in doing this with the ordinary needles, and have had made a handled needle with a sharp, short curve and an eye in the point. Probably a sharply curved staphylorrhaphy needle would answer well.

6. *Hæmorrhage.* For the scalp I used the narrow band of the Esmarch apparatus in the second and third cases, as suggested by Dr. M. Allen Starr. In the second it answered admirably, but in the third

was soon cast aside as unnecessary. Generally, I believe, it will be very useful.

Hemorrhage from the vessels of the brain itself is one of the most important of all the operative questions. Morphia, as a preliminary, is useful, I have no doubt, as is also ergot, though I should give the latter in a dose of $\frac{f3ij}{iv}$ rather than $\frac{3j}{i}$, as I used. The effect of the cocaine applied directly to the brain was certainly very good. I shall, however, try it in a stronger solution (ten per cent.) in the next case. Very possibly, also, antipyrin might be of use in the same way. All such solutions, corks, bottles, etc., should be sterilized. I also used boiling water cooled to 115° or 120° F., to check the hemorrhage, and I could not see that its liberal use did any harm to the brain tissue. Pressure, also, is a most valuable means. But, after all, the chief reliance must be on the ligatures of catgut. They should not be chromicised, as that lasts too long, and may be an irritant, but are best prepared in oil of juniper and kept in alcohol (Kocher). In my second case I had no difficulty in tying the vessels, but in the third, and especially the first, their friability was such that the most delicate manipulation and equal tension on the two ends were requisite for success. It is not the arteries but the large thin-walled veins that give trouble. The cautery in any form should never be used. If there be any trouble in securing vessels of the dura or brain near the edge of the bony opening, this opening must be fearlessly enlarged, so as to give ready access to them. If the middle meningeal (or other artery, of the dura) cannot easily be tied at the cut edge, or even in its continuity, a suture may be passed around it by a needle passed through the dura, but the dura should then be carefully lifted so as to avoid any underlying veins. Weir has suggested the application of clamps to the cerebral vessels for twenty-four hours. My experience would make me doubt whether they would hold with such friable tissues, and, if they did, the tossing about of the patient's head might easily displace them, and possibly even involve great danger to the brain itself.

7. *Recognizing the centre sought for.* Only in Case III. did I have a definite centre in view. Ordinarily the gyri and sulci of the surface would be a fairly reliable guide, together with the various methods now used for mapping these out on the surface of the skull. If in doubt, the ordinary faradic battery will serve us excellently, as was shown in this case. The response to the stimulation of various parts of the same convolution was immediate, undoubted, and in every way satisfactory.¹ In order more handily to use this means of diagnosis I have had made by Mr. Flemming this little rubber handle with two insulated poles, the

¹ Cf. Horsley's Case V., THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, April, 1887, p. 358

stems of which, being flexible, can be placed near together or far apart as desired.

8. *Photography of the brain.* This can readily be done by an ordinarily expert amateur. Dr. Lewis and I are both of the opinion that

FIG. 10.



the exposure should be practically instantaneous with the most sensitive plates made. Even with such plates they may be under-exposed on a cloudy day. But the danger of movement by the patient and the constant oozing of the blood make it desirable to have the shortest possible exposure. Possibly the "flash powder" may be useful, but if employed the possible firing of the ether should be borne in mind. The photography is scarcely any interruption to the operation in the hands of a competent assistant. But I was disappointed in its results in both my cases (II. and III.). It gave no good details owing chiefly, I think, to the wet, glistening, curved surfaces and deep shadow at the point of excision. I would prefer to have a rapid sketch made by a good artist who understands anatomy.

9. *Drainage.* Combined tubular and capillary drainage answered best in the brain, as elsewhere. The tubing should be removed, as a rule, at the end of twenty-four hours. Whether it would have been wise to do so in my first case, with evidences of increasing pressure, is even now, in my mind, doubtful. The horsehair may be removed in three to five days. Everything should bend to the speediest possible healing of the wound, thus preventing hernia cerebri and favoring a quick recovery.

10. *Replacement of the bone.* This most interesting and valuable recent addition to our operative procedure receives further encouragement from the results of Cases II. and III. In the last the disk of bone (one and a half inches) was replaced with about fifteen fragments bitten out by the rongeur forceps. The skull is so completely restored that except for the scars and slight flattening one would not know that it had ever been trephined. Heretofore, when the dura mater has been removed, the bone has not been replaced, but Case II. shows that even then it may be done with ease by attaching it to the under surface of the flap by chromic catgut. Of course, the small pieces cannot be so utilized, so in Case III. I had a lamb in the adjoining room, and if the removal of the dura had been necessary and any large gap been made by the rongeur forceps I meant to replace the trephine button and fill up the remaining gap by another button from the lamb's skull, trimmed

by the rongeur to suit the opening. I find that the back of the lamb's skull has nearly the same curve and thickness as man's, and will give one good button from its centre or, at a pinch, two might be got from it.

I had no trouble with the large disks, and do not think it at all needful to chop them up into small fragments as Macewen did. But if the bone is to be replaced, the most minute care must be given to it from the moment of its removal to that of its replacement by one of the assistants, whose sole care it should be. I have recently had to remove a similar one and one-half inch button from a case trephined by a friend. By accident the button escaped observation for perhaps twenty minutes or more after its removal, and so lost its heat, even if it did not become septic, which seems not probable. It gave no trouble for over two months, but then produced an abscess, headache, etc., which were quickly relieved by its removal. It was entirely necrosed. It is, however, proper to say that the skull was unusually thick and almost all compact tissue, and that, soon after the primary operation, the wound had to be reöpened for hemorrhage from the scalp. Even with the utmost care, disks of bone, if chiefly of compact tissue, cannot always be successfully replaced. I recently had to remove three such, much smaller (one-half inch) buttons from one of my cases of trephining of the lower jaw. Yet Dr. J. S. Miller (*Medical News*, liii. 136) has just reported a successful case of reimplantation of one such button in the same bone.

11. *Rapidity of recovery.* Case I., in consequence of the reöpening of the wound and later complications, was long in getting well; but Cases II. and III. were out on the street on the seventh and eighth days, their highest temperatures having been 99.8° and 100° respectively; Case III. with but little, and Case II. with absolutely no pain and no medicine. No iodoform was used. I get better results without it and its abominable odor.

Thanks chiefly to vivisection and antiseptis, cerebral surgery will show, within the next few years, triumphs as exact, extraordinary, and beneficent as has abdominal surgery.

1729 CHESTNUT STREET, August 27, 1888.

CÆSAREAN SECTION WITH OÖPHORECTOMY.

REPORT OF A SUCCESSFUL CASE.

By JOHN G. JAY, M.D.,

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SINCE the earliest history of gastro-hysterotomy this operation has occupied a position of preëminent interest in obstetrical surgery. It was probably first brought to notice at a very early date, and may have had

its origin in accident, being afterward improved upon by the surgeon. The number of authenticated so-called "cow-horn cases" would lead to this supposition, and it is a remarkable fact, that eight out of eleven of them have recovered.

The operation is said to have been done by the Greeks, but only after the death of the mother. A Roman law required the section to be performed under the same circumstances—*i. e.*, death during pregnancy, but as it appears never to have been done at that day upon living women, it is probable that Julius Cæsar was not delivered in this manner as is by many supposed, for, according to Seutonius, his mother was yet alive at the time of his invasion of Britain.

The term Cæsaean operation, by which it is known, is therefore probably derived from the verb *cædere*, and those persons so brought into the world were called Cæsones or Cæsares. As it was something remarkable to have been thus delivered, great men were not loath to have it believed that they were Cæsares. Hence the term gradually became indicative of distinction and eventually the synonym of *imperator*, and even at this day the Russian and German nations call their monarchs respectively *Czar* and *Kaiser*. On the other hand, the operation might well have derived its name from being the most important one of surgical obstetrics.

The operation on the living woman, it is said, was first done about the beginning of the sixteenth century, and Bauhin states that a woman was operated upon at Siegerhausen, in Germany, about this time by her husband who was a cattle gelder; that she recovered, and afterward gave birth to several children in the natural way.

Six cases are recorded by Harris in which women have operated upon themselves, with five recoveries. Aisenstadt, of Novgorod, Russia, recently reported the sixth case, which alone was fatal.

In many of the works on obstetrics the Cæsaean section *versus* craniotomy receives full consideration, but contrariety of opinion among authors of the same as well as of different periods is so great that it is not surprising that the operation as now practised is of such recent date. As a rule, craniotomy has at all times until very lately been given by many odds the preference: gastro-hysterotomy being regarded as the *dernier ressort* of midwifery. Even in recent literature this operation is by many deprecated when the destruction of the child may save the life of the mother.

In this work on midwifery, published in the early part of the present century, Denman makes a statement to the effect that every woman upon whom the operation is done will probably die; although he speaks favorably of the chances for the child. He also says, that, "from a detestation of the apparent cruelty of the operation, it was never performed or even proposed and seldom talked of in England until about that time."

The disfavor toward the operation may well be understood when it is related that of the first thirty Cæsarean sections done in great Britain but one woman recovered. At the same time the continental surgeons were operating with wonderfully good results considering the methods then pursued, as nearly fifty per cent. of their cases are said to have recovered. This, however, is questionable. The disparity of results was no doubt due to the English aversion to the operation, which postponed the section until too late to be of benefit. At the present time the showing for Great Britain is vastly better but until very lately the maternal mortality has been as great as 79 per cent.

In the United states Dr. R. P. Harris, of Philadelphia, has with great care collected data relating to 170 cases which resulted in saving the lives of 65 women. This is, however, a frightful mortality. The figures include all operations, as far as known, which have been done in this country; those done without regard to antiseptic measures, as well as those in which improved modern methods were employed. If these cases be divided, and such as have been treated according to *strict principles of antiseptis*, with other modern improvements, be grouped, we have a very much better exhibit.

According to the same authority, of eight operations in this country in 1887 four saved the women and of the children five were also saved. In one of his letters he tells me that the operation which I shall report in this paper was the *second* Cæsarean section done in the State of Maryland and the *first* to save the life of the mother. I have recently learned that mine is the *third* in order, although the *first* successful, and the *first* Sänger. Drs. P. C. Williams and G. Farnandis did the operation at the almshouse about the year 1859. The second by Dr. James W. Butler was done December 20, 1869, and since my operation two more (Sänger) have been done in this city.

Dr. Harris mentions also five cases of laparotomy done in the State of Maryland after uterine rupture, which were therefore not Cæsarean sections. Three of these were fatal to the mother, the children being dead. One done by Dr. John H. Bayne in 1856 saved the mother; the child was dead. With similar result was an operation done by Dr. Butler in 1869.

Dr. Harris's statistics are of the greatest interest and value, and they prove what a benefit the modern or Sänger operation has been to an unfortunate class of parturients. His record of the first fifty cases in Europe and the United States is as follows:

Women saved	34
Children extracted alive	45
Women lost	16
Children extracted dead	5
Operators	31

The first fifty cases in Continental Europe alone show a still better record.

Women saved	39
Children extracted alive	48
Women lost	11
Children extracted dead	2
Operators	29

In the last half of each of these series the per cent. of recoveries is higher than in the first, and this fact is full of promise for the future of the improved Cæsarean operation. In the past two or three years the per cent. of recoveries has wonderfully increased in the United States, and there is reason to hope that it will rise still higher. The secret of this improvement in the results of gastro-hysterotomy lies in the fact that latterly greater efforts have been universally made for the employment of better methods. Men in various countries, widely separated, have been devoting their best energies to the same ends. Since the revelation of Koch and others, relative to microorganisms, all surgeons and obstetricians have been keenly alive to the importance of the exclusion of septic germs: but, besides this all-important item in the treatment of wounds, there are others, among which not the least is the accurate and proper coaptation of surfaces. It indeed seems strange that an operator would ever open a gravid uterus without making an effort again to close the incision; yet the idea of suturing the gaping wound did not apparently occur to the early operators, but contraction of the organ alone seems to have been relied upon, and until quite recently some cases have been thus treated.

The indications for gastro-hysterotomy should in every case be well assured, for the risks of the operation are by no means few even when the most perfect methods are employed. They may, however, be not so great as in craniotomy, in cases unsuitable to that operation. All authorities agree that when the conjugata vera is two and a half inches or less, delivery of a head of ordinary diameters becomes impossible without craniotomy; indeed, embryotomy may be necessary, and these expedients are more or less difficult and dangerous. Here, then, is indicated any other operation which will yield as good or better results to the mother and which may, at the same time, save the life of the child. I believe that the *improved* and *modernized* Cæsarean section is such an operation, and when there is a question as to the propriety of one or the other procedure, it should, I believe, always have the preference. This is just the reverse of universal opinion upon this question of not a great while since, and which has many supporters at the present time.

The reaction in favor of the Cæsarean section as opposed to craniotomy and embryotomy is becoming more and more decided, and men who formerly had a strong preference for the latter operations have,

since the adoption of modern methods, reversed their opinions. In the *Annual of Universal Medical Sciences*, for 1888, opinions cited from various eminent sources would appear to indicate that the sense of the medical profession is crystallizing toward a conviction that where there is a question as to the propriety of *craniotomy*, or the *modern Cæsarean section*, the latter operation is one of election.

A number of instances have been cited in which women having had the Cæsarean section performed, have subsequently become pregnant and given birth to children. The reason for the section does not appear, but it could not have been due to very great pelvic deformity, otherwise the latter deliveries through the parturient canal at full term would have been as impossible as the first. Perhaps premature labor may have been induced.

In those cases in which pelvic deformity is so great that gastro-hysterotomy, laparo-elytrotomy, or any other maternal section is necessitated, the woman ought never again to become pregnant. She ought not, if possible to prevent it, be allowed the opportunity of becoming so. The prevention of this was formerly a greater problem than at present. Oöphorectomy done at the time of the Cæsarean section is the preventative. I know that the question of its propriety elicits a difference of opinion, and in some instances circumstances may make it desirable to refrain from it; but in the main I believe the principle to be correct. More than one reason may be given for the sterilization of such cases. Recently Gusserow has spoken of the possible danger of uterine rupture in pregnancies succeeding the Säger operation, as has been known to happen after the older methods of hysterotomy; and when there is grave uterine disease he advocates Porro's operation. Probably he would regard multiple myoma an indication for the last named procedure. The removal of ovaries and tubes or the ligation of the latter as suggested by Dr. Garrigues in a recent paper, are simpler methods than Porro's hysterectomy.

For a married woman, sterilization may be her only safeguard from equal or greater peril in the future. That peril may come speedily. In a few months she and her doctor may be again confronted by the dread alternative of the Cæsarean section, or the destruction of her unborn infant. If seen in time, the induction of premature labor would be the proper course; but notwithstanding precautions, circumstances may be such that the pregnancy is allowed to continue to maturity.

That oöphorectomy adds a pronounced degree of risk to the patient's life, I do not believe. As it may be so easily and expeditiously done, and as it removes entirely a future danger, I cannot coincide with those whose counsel is against it. Indeed, if the pelvis be very narrow and deformed, it would to me seem culpable to allow them to remain. If, on the other hand, the pelvis be sufficiently capacious to permit the passage

of a premature, yet viable, infant, the requirements might be different. Of this the operator must be the judge.

The pain in the pedicles, to which Dr. Garrigues refers in his recent instructive article on "Improved Cæsarean Section," may, I think, be easily controlled by anodynes, which are required after all operations of such magnitude.

CASE.—About twilight on the evening of October 22, 1887, I was called in consultation by Dr. E. G. Welch to a case of dystocia caused by deformed pelvis. The patient, Maria Carter, colored, aged twenty-seven, married, primipara, had, I was told, been in labor for more than a week; and since the previous Wednesday, October 19th, the pains had been frequent and very severe, recurring every few minutes. On the morning of Friday October 21st, the day before I first saw her, the membranes ruptured, and later in the day the midwife in attendance called in professional aid. The woman, I learned, is the oldest of four children, the rest of whom died at an early age, but of what diseases I could not ascertain. She is quite fleshy and of low stature; her exact height being fifty-five inches. Although she is apparently healthy now, she bears evidence of rachitis; for besides a deformed pelvis, her tibiæ are markedly bowed forward, and she has a slight lateral spinal curvature.

Previously to my seeing her Dr. S. W. Seldner had been called in consultation, and agreed with Dr. Welch that natural delivery was impossible, and that owing to the very deformed and contracted pelvis, even embryotomy would be a difficult undertaking. Under these circumstances the Cæsarean section seemed to be the procedure indicated.

Upon examination, my opinion was in accord with theirs. I found a pelvis which, as well as I could estimate, was in its conjugate diameter about one and three-fourths inches; the promontory of the sacrum projecting forward to the extent of producing this diminution and of being mistaken by the not very skilful midwife for the fetal head. Besides this antero-posterior deformity, there seemed to be a lateral contraction, but as to the extent it was difficult to form an accurate estimate. The fetal head was beyond the reach of the finger, this being partly due, as I afterward discovered, to the presence of a large interstitial myoma in the lower segment of the posterior uterine wall.

I endeavored to induce the patient to be transferred at once to the Hospital of the Good Samaritan, as her surroundings were much otherwise than favorable for an operation such as the one contemplated, the house in which she lived being an ordinary negro tenement, by no means neatly kept, and, as may be inferred, far from aseptic. Failing to obtain her consent or that of her family to have her removed to the hospital, I found that if I operated I should be compelled to do so where she was, which seemed more humane than to leave her to her fate.

Owing to the lateness of the hour, it being already dark, and to the fact that there was no gas in the house and no other means of obtaining adequate illumination; also that it was essential to cleanse the premises and make other preparation; it was found quite impracticable to do the operation that night, and although I was fully aware that there was no time to be lost, I concluded that the chances of success would be greater by waiting until next morning. In the meantime I ordered that the dusty carpet be removed, the floor scoured, and the walls and ceiling

whitewashed. Upon my arrival on the following morning I found that my directions had not been fully carried out and that the walls remained uncleansed; but as it was now too late to do this I was obliged to operate in an apartment only *partially* prepared and consequently under circumstances quite unfavorable.

I mention these facts to illustrate the difficulties that are frequently encountered in the houses of patients of this class, and also to show that it is not absolutely necessary to success, as some have seemed to think, that this operation when performed in a large city be done in a hospital.

On the morning of the operation the patient was in a much more nervous and exhausted condition than on the previous evening; she realized the peril she was in and her mental state was that of despair, with a desire for a speedy termination of her suffering.

Having determined upon the so-called Säger method, the patient was anæsthetized with chloroform, and with the assistance of Professors Ashby and Winslow, and Drs. Welch, Seldner, and Germon, the operation was performed.

The preliminaries consisted of catheterizing the bladder, thoroughly cleansing the abdomen with soap and water, and, after drying, again washing with a solution of mercuric bichloride 1:2000. Towels wrung out of the same solution surrounded the exposed abdominal surface. A dilute solution 1:6000 was used for the sponges. The hands of the assistants were thoroughly cleansed with soap and water and then washed with a solution of 1:2000. The instruments were immersed in a solution of carbolic acid of two and a half per cent. The sutures, both catgut and silk, were aseptic, and in every other respect the operation was done with as great regard to antiseptic principles as circumstances would permit.

The abdominal incision was made in the linea alba from the umbilicus for five and a half inches toward the symphysis pubis, and was afterward extended upward for an inch and a half to the left of the umbilicus.

The hemorrhage from the abdominal incision was slight, and was controlled by compression forceps. The peritoneum was carefully opened and slit with a probe-pointed bistoury between the index and middle finger to the extent of the abdominal incision. It was not possible to lift the gravid uterus from the abdominal cavity through the incision of the length which I had made, and I hesitated to extend this, lest escape of the intestines should prove troublesome. This accident, however, did occur after removal of the infant, but they were covered by warm cloths wrung out of dilute carbolic solution and replaced as speedily as possible.

Upon examination of the uterus the placenta was found to be attached to the anterior wall, so that its section could not be avoided. Except the anterior surface beneath which the placenta was attached, the uterus was thickly studded over with fibroids of various sizes from that of a filbert to nearly the dimensions of a pullet's egg. Even in the excepted area there were several. Some of these tumors were intramural, others subserous, and several of them were distinctly pedunculated.

Before opening the uterus it was carefully pressed upward into and maintained in the abdominal incision to prevent the escape of the intestines and the flow of blood into the ventral cavity, neither of which was

entirely successful. Section of the uterus was rapidly made to the extent of five and a half inches, upon which there was a deluge of blood. This was of short duration, as I introduced my hand, rapidly detached and removed the placenta, and compressed the funis to prevent further loss of blood from the child. As quickly as possible the infant was extracted, head first, and passed to an assistant; at the same time, another, introducing his hand into the abdomen, grasped the uterus around the supravaginal cervix and in this manner constricted it until an elastic tube ligature was applied. This could not be done until the infant had been extracted.

The infant, a well-developed male, showed but feeble signs of life, and although efforts were made to resuscitate it they were of no avail, and it died after having given a few gasps.

As soon as the placenta was detached the bleeding to a great degree ceased and was thereafter easily controlled.

The fibroids being so numerous I considered the propriety of removing the whole organ and appendages by Porro's method; there being a question as to whether the presence of so many tumors might not unfavorably influence the result. I concluded to follow what I considered as perhaps the safer course and allowed the uterus to remain. Before dealing further with the uterus the broad ligaments were transfixed, stout double ligatures passed and secured and with the curved scissors both ovaries and tubes were removed. After dusting the cut surfaces of the pedicles with iodoform, they were dropped back into the abdominal cavity.

Attention was now again turned to the uterus. On the left side of the incision and barely escaping section there was an intramural myoma about the size of the last phalanx of the thumb, the presence of which necessitated resection of the uterus to an extent equal to its width. The peritoneum was therefore dissected from the uterus at the site of the myoma for about an inch, this dissection diminishing in width as the ends of the incision were approached. A segment of the uterine wall corresponding to the extent of the peritoneal dissection and slightly bevelled toward the median line was removed, as well as a redundant strip of the membrane itself. On the right side the peritoneum was dissected up to the width of one-third of an inch and the muscularis was bevelled as on the opposite side. A continuous carbolized catgut suture was next employed to close the mucous surface and including the endometrium. The second uterine sutures were interrupted, eleven in number, and of stout braided carbolized silk. These were entered about half an inch from the incision of the muscularis and extended down to, but did not include, the endometrium. On the opposite side the sutures were brought out upon the peritoneal surface at the same distance from the incision. The ends were drawn and clamped, but left untied until the peritoneum had been carefully closed by thirteen fine silk interrupted sutures which were passed in and again out of the peritoneum on each side and which brought the opposing serous surfaces into close and exact apposition. After this the deep sutures were ligated. The slight oozing of blood which followed the removal of the elastic tube ligature was absorbed by a large soft, flat sponge; it was of no special moment and soon ceased.

After thoroughly cleansing the peritoneal cavity with water of a temperature about 120° F. and dusting the line of uterine incision with

iodoform, the raw surfaces of the abdominal parietes being lightly dusted with the same, they were brought together. This too was effected by three sets of sutures. The first was continuous, of fine carbolized catgut and included the peritoneum only; next, twelve deep, interrupted, of stout braided silk; and lastly, a continuous superficial suture of fine silk for the greater perfection of dermal coaptation. In the lower angle of the wound, a rubber drainage tube seven-sixteenths of an inch in diameter, and extending down to Douglas's cul-de-sac, was inserted. The line of incision was abundantly covered with iodoform powder and a compress of iodoform gauze, and relieved from tension by four broad strips of improved adhesive plaster. A thick layer of borated cotton secured by a roller bandage completed the abdominal dressing.

After washing out the vagina with warm carbolized water, the external genitals were well dusted with iodoform and a pad of borated cotton applied to absorb the discharge; with directions to renew this when required.

The operation occupied nearly two hours, much of this time being consumed in the insertion of the numerous sutures. The patient was put to bed and bottles of hot water and hot smoothing irons applied. She rested well, and late that night was comparatively comfortable with fairly good pulse and temperature slightly above normal. On the following morning, October 24th, the pulse was 132 temperature 99.6°. She had a slight amount of nausea, but very little pain, that being controlled by morphia gr. one-fourth, which was administered with quin. sulph. gr. iij, by suppository every three hours. The urine was drawn with a catheter, and this continued to be done twice daily for several days, until she could pass it herself. She was allowed crushed ice during the night, but nothing more. In the morning she took a small quantity of black coffee and later an ounce of milk with lime water and ice. This was repeated several times during the day, and in the evening as she seemed faint she was given a little brandy with mint and ice.

The lochial discharge was of the normal amount and appearance and without any odor of decomposition. At each visit, which was at intervals of five or six hours during the first few days, the perineal pad was changed, and the pubes and vulva dusted with iodoform. At a late hour in the evening of the day following the operation the pulse was still 132 and the temperature had risen to 101.2°. Early on the following morning, October 25th, the pulse had fallen to 108, temperature to 100°. In the evening at 6 o'clock the pulse was 118, temperature 99.8°.

For several days the temperature ranged from 99.8° to 101.4° and even after three weeks was at times slightly above the normal.

On the third day after the operation she was again taken with nausea and vomited several times. This was relieved by Creasot. gtt. j; Acid. hydrocyan. dilut., gtt. iv; Aq. calcis, ʒss; several doses given during the day.

Her nourishment for two weeks consisted principally of beef tea, peptonized beef, milk, and chicken boiled to a jelly. During the first ten days she several times was taken with a depression or faintness about 3 A. M., for which I ordered brandy, ammonia, and larger doses of quinia,

with relief. This condition was not due to want of nourishment as might be supposed, for it would occur when she had taken food only half an hour previously. Often in serious illness the vitality of patients seems lowest about this hour, and so it was with her.

On the 28th of October I drew the drainage tube partly out, and cut off about an inch and a half of it. October 30th another portion of the tube was removed, and the next day the remainder. On this day also the abdominal dressing was entirely changed, and the wound was found closed by primary union, except just below the umbilicus, and of course at the lowest end where the tube had been. All the sutures were removed except three at apparently weak points, and fresh dressing applied. The remaining sutures were removed at the next dressing, after the lapse of four more days.

The following is a record of the pulse and temperature for sixteen days after the operation.

Date.	Pulse.		Temperature.	
	A. M.	P. M.	A. M.	P. M.
October 23d		95	....	98.7°
" 24th	132	132	99.6°	101.2
" 25th	108	118	100	99.8
" 26th	108	105	100	99.3
" 27th	110	119	100.5	101
" 28th	101	105	100.6	100.8
" 29th	109	110	100	101.4
" 30th	100	100	100.8	100.8
" 31st	95	112	99.6	101.3
November 1st	93	90	99.3	100.8
" 2d	88	95	100.2	100.8
" 3d	96	97	100.2	101.3
" 4th	90	95	99.4	100
" 5th	98	98	100.1	101
" 6th	89	93	100.2	100.5
" 7th	80	...	99.2	....

For about two or more weeks the temperature remained somewhat above the normal, and on two days, November 15th and 16th, it rose to 100.2°. On the 19th it was 98.6°. From that time it continued about normal. From the opening where the tube had been a small amount of purulent fluid continued to flow for several weeks, when it ceased, and the wound entirely closed.

During the latter part of the time that the tube was in the wound, a quite sensitive induration developed in the left hypogastrium. This induced me to remove the tube, as I was convinced that it was the cause of it. The induration then became less sensitive and finally subsided.

That the drainage tube was the cause of the continued elevation of temperature as well as of the local inflammation I have no doubt. It

was probably the cause also of the faintness or depression above referred to. In view of this, the propriety of having used a drainage tube at all may be questioned. My reasons for inserting it were several. On account of the numerous fibroids throughout the uterus I was not greatly confident that the incision in this organ would satisfactorily unite. Also because the abdominal cavity had been opened in an atmosphere not the most sanitary and the peritoneum had remained thus exposed for a considerable time, I was fearful of peritonitis, and deemed it safer to afford this vent. Finally, because abdominal drainage is advocated by Kehrer in this transverse section of the lower uterine segment.¹

Only a few days elapsed before I changed my opinion concerning the propriety of using the tube, and it became the source of the greatest anxiety to me. I felt that it should not have been put there, and yet I feared to withdraw it, lest the irritation which it had already caused might continue, and having no direct vent, a deep accumulation of pus be the result. I therefore withdrew it very cautiously and by degrees, requiring four days for its removal. The canal remained open for a time, moderate purulent discharge continued the while and eventually cicatrization followed.

I freely express my belief that the drainage tube was not necessary, and that it rather retarded the favorable progress of the case. It was of soft rubber, had been treated antiseptically, and was liberally fenestrated.

I think that in a similar case I should not use a drainage tube again, but if I concluded for any reason to do so, I should use a tube of glass, or better, perhaps, of decalcified bone.

The location of placental attachment in this case was probably influenced by the multiple fibroid condition of the womb, as these tumors were found numerously disseminated throughout the uterine parietes with the exception of the area occupied by the placenta. The largest myoma was about the size of a turkey egg, though flattened, was in the posterior lower segment of the uterus, and was intramural.

It is well known that the African race in this country is much more subject to myoma of the uterus than the white. There is abundant evidence of this in communities where there is a large negro population. I have, however, never seen a case in which they were nearly so numerous as in this.

The location of the placenta, the necessity of cutting through it, and the sudden profuse hemorrhage which followed, lead to an inquiry of the probable cause of death of the child. I think it is not difficult to understand that the relative loss of blood from incision of the placenta is greater to the infant than to the mother. The relation of such a case to an *ordinary* Cæsarean section, with placenta *elsewhere* attached, would

appear to be somewhat the same as one of placenta prævia to a normal delivery *per vias naturales*, in which two out of three children are born dead, and about one of four mothers lost.¹

It is difficult to estimate the exact proportion of the several causes which, operating upon the infant, occasioned its death. The three principal were, the prolonged and severe uterine contractions (these having been sufficient to distort the head by driving it against the deformed pelvis), the exhausted condition of the mother, and, lastly, the profuse placental hemorrhage.

I shall say a word in regard to suturing the endometrium, as this is not usually done and is generally advised against.

To make the deep or main sutures include the thickened mucous membrane would be a gross fault, as contraction of the muscularis would almost certainly cause them to cut through this soft and fragile coat, thus leaving the sutures lax and the wound gaping, with most serious dangers from various sources. If, however, the suturing include the endometrium alone, it excludes the lochia from the wound and makes the closure of the internal aspect of the incision more secure. The only objection, I think, is the additional time required for it.

The separate suturing of the abdominal peritoneum I had done before and had also seen it done in several laparotomies by my colleagues, Professors Winslow and Ashby. With a continuous suture it requires very little time, and as peritoneal surfaces when thus brought in contact unite in so short a while, the abdominal cavity is in this way shut off from the external wound, and from danger. Then if from any cause primary union does not ensue, if the abdominal sutures should by any means become lax, or if collections of fluids occur in the line of incision, the abdominal cavity is closed and the discharge escapes from the external opening.

A point of interest in the subsequent history of this case, is that on two occasions, the first about two months after the operation, the second only three weeks since, she had a flow resembling in every way the catamenia.

In regard to her marital relations, she states that they are the same as before the removal of the ovaries, and that she experiences no diminution of sexual inclination.

At this time, more than seven months after the operation, she has increased largely in flesh, and her health and strength are excellent.

JUNE 2, 1888.

¹ Lusk's Midwifery. Edition 1835, p. 593.

A CASE OF FOCAL EPILEPSY SUCCESSFULLY TREATED BY
TREPHINING AND EXCISION OF THE MOTOR CENTRES.¹

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MEDICAL REPORT BY DR. LLOYD.

THE following case was admitted into the nervous wards of the Philadelphia Hospital under the writer's care, early in the past spring:

J. W. G., aged thirty-five years, American born. Mother died of phthisis, father of paralysis. Patient has had the usual diseases of childhood. He denies positively ever having had any venereal disease. When fifteen years old he was struck on the head with a ball-bat, from which blow he became unconscious and was confined to bed for one week. Further details of his condition at that time are not obtainable. His fits did not begin until six years after. Fourteen years ago he had his first seizure while asleep. In this he bit his tongue. The question arises whether this was his first fit, or whether really it was not rather his first *discovered* fit by reason of the wound of his tongue. Probability is lent to the latter supposition by the fact that many of his seizures have been nocturnal. Nine months after this first discovered fit he had his first seizure during the day. After this time he had them varying in number and intensity until admitted to the hospital. He described his seizure as follows: He would have a decided sensory aura commencing in the fore and middle fingers of the left hand, extending up the arm, through the neck to the left side of the head, when the convulsion would begin. He has stopped the aura at times, and thereby the fit, by tightly compressing the wrist. The aura lasted quite an appreciable time, and gave him ample notice of the explosion.

During the time of the patient's early sojourn in the hospital his seizures were mostly nocturnal. He was conscious of many of these. He said they lasted but a short time, involving, as a rule, only the left face and arm, and that he did not always lose consciousness. He also said that he has had occasional attacks involving both sides of the body, but his accounts of these were not clear, and it is probable that his consciousness was lost or obtunded in these greater attacks. The few minor attacks, which happened in the daytime, occurred during the absence of any trained or intelligent observer, but several of his fellow-patients confirmed in the main his own account.

In order to render the diagnosis more positive and the description more exact, Dr. F. W. Talley, resident physician, began a systematic nocturnal watch upon the patient, without the latter's knowledge, sitting

¹ Read before the American Neurological Association, at the meeting of the Congress of American Physicians and Surgeons, Washington, D. C., September, 1888

up in constant vigil several nights in succession. During the first night nothing was observed, although the patient said in the morning that he was sure he had had one or two slight seizures. In the second night Dr. Talley succeeded in observing a characteristic attack, which he describes as follows:

The fit commenced in the left arm. The fingers were flexed over the thumb, the hand flexed at the wrist, the forearm flexed upon the arm. The head was drawn over to the *right* side, the right arm and leg then became rigid. The head soon began to rotate to the left, the fingers of the left hand relaxed, the mouth opened and was drawn to the left side with the right angle depressed. As soon as the face reached the median line a series of clonic spasms began in the left arm and left side of the face. (In two of his most severe attacks clonic spasms were observed in his right arm.) The pupils were widely dilated and fixed. Consciousness appeared to be preserved, partially, at least, throughout. The spell was of very brief duration. Following the fit there was well-marked paresis of the left arm and left side of the face.

These memoranda by Dr. Talley very faithfully describe the main features of the attack. The frequency of the seizures, on account of which the patient had applied to the hospital, increased, and they occurred both day and night, so that they were soon observed by the nurses, members of the resident staff, and by several of the neurological and surgical staffs, who were called in consultation. The greatest number of seizures recorded in one day was twenty-eight, at which time the patient seemed to be passing into a veritable epileptic status, being confined to bed, and becoming very dull and altered in his mental condition.

The paresis of the left face and arm at this time began to be very noticeable. The face was relaxed, the angle of the mouth depressed, and the right or sound side drawn over perceptibly. The orbicularis palpebrarum muscle was not involved. The tongue was not paralyzed (?). The pupils were equal and responded to light and accommodation. The arm was perceptibly weakened, especially in the flexors of the fingers and wrist, the biceps, and the deltoid. These muscles were not wasted, and did not present any reactions of degeneration. On those days when the patient's fits were infrequent this paretic state of the muscles improved considerably in the longer intervals, and was most marked just after a seizure. There was no alteration or retardation of tactile sensibility. An examination of the eye-grounds at this time by Dr. de Schweinitz revealed nothing indicative of organic cerebral changes.

The onset of these seizures, upon which special stress was laid both in the diagnosis and subsequent surgical treatment, was always the same, and verified by numerous observations. The left hand, especially the two fingers, was the seat of the signal symptoms, both sensory and motor, and, however varied the extent of the convulsive wave in different seizures, there was never any variation from this constant initiation. The convulsive area varied considerably, from a slight twitching of the affected face and arm, with no apparent loss of consciousness, to an almost universal bilateral convulsive explosion, always worse, however, on the left side, with decided obscuration of consciousness. This loss of consciousness was not always as great as it appeared, for once after a severe seizure, during which I asked him some test questions, he answered them correctly as soon as he regained control of his muscles. The patient

complained but little of headache and said it had never troubled him: the slight degree of it from which he suffered in the hospital appeared to be an effect of his rapidly increasing seizures. He had no gastric irritability whatever.

It seemed very evident to my mind in studying this case that we had a focus of discharge in the region of the junction of the middle and lower third of the ascending frontal convolutions on the right side, possibly involving also contiguous portions of the ascending parietal convolutions in which experiment seems to have demonstrated centres for the hand and wrist. The nature of this irritative lesion did not appear very clear to me, although I was inclined to think it might be old scar tissue and thickened membranes, the results of his injury. I considered the long duration of his affection to contra-indicate a tumor, especially as he had neither headache, vertigo, vomiting, nor changes in his eye-grounds; although the focal nature of the discharge and the more or less constant paresis of the convulsed muscles were very suggestive of a new growth. I saw no reason to doubt the man's sincerity on the subject of syphilis, but I classed him with the rest of mankind and gave him the benefit both of the doubt and the iodides. He did not improve. A consultation was held with my colleague, Dr. John B. Deaver, of the surgical staff, and an operation discussed. At a subsequent consultation with Drs. Deaver and Sinkler the operation was decided upon, with the concurrence also of Drs. Mills, Dereum, and de Schweinitz, who kindly saw the case by invitation.

On the 12th of June Dr. Deaver operated in the presence of the above-named physicians and with the assistance of Dr. J. William White. The details of the operation and the surgical aspects of the case will be narrated by Dr. Deaver. It had been decided beforehand that the incision should be simply an exploratory one in case nothing was discovered in the membranes or cortex, unless by faradic stimulation we should succeed in locating the irritative area in the cortex, in which case it should be cut out. By following Reid's and Horsley's lines Dr. Deaver exposed, with an inch and a half trephine, an area which appeared to include both sides of the central fissure (Rolandic) in the region of the junction of the lower and middle thirds of the ascending convolutions. This area was afterward much enlarged, especially in an anterior direction, by the Hopkins' modification of Rongier's forceps. Nothing abnormal whatever was discovered in the bone, membranes, or cortex by gross inspection. The difficulty of identifying the parts was so great that exploration was soon begun with a faradic current, and with very gratifying results. Upon faradizing a point back of the fissure of Rolando, more properly the wrist centre, according to Ferrier, muscular contractions occurred as follows: turning in of the thumb on the palm, flexion of the fingers, flexion of the wrist, extending to flexion of the elbow (biceps action). I cannot say that it was verified topographically—*i. e.*, by appearance of fissures and convolutions seen in the wound, what exact centres were here excited. It was behind what appeared to me to be the Rolandic fissure. The difficulty of identifying fissures and convolutions in a small

trephine wound appears to me to be extraordinary. What is of greater importance was, however, here accomplished; the reproduction of the exact muscular movements which occur in the fit. At a point farther front and below, and in front of the fissure seen in the middle of the wound (Rolandic?), faradic stimulation caused marked contraction of the face-muscles of the affected side. The mouth began to contract, and was drawn toward the left side with a tremulous motion, and soon the tongue began to protrude toward the left corner of the mouth. Soon the left thumb began to be contracted and adducted into the palm; then the fingers were contracted into the palm and about the same time the face muscles began to contract more actively, while the head was drawn to the left side, and the left eyelid began to work. At the same time the hand was gradually closed, and contraction of the forearm and arm began, while the latter was drawn from the side to an angle of forty-five degrees (deltoid action), and contractions of the biceps occurred. At no time in the course of these faradic applications, anywhere within the area exposed by the trephine and forceps, did any contraction of the leg muscles occur.

I observed especially, in making these applications of faradism to the cortex, that considerable areas of it did not appear excitable at all to the strength of current employed, at least did not give muscular response anywhere, while the two comparatively narrow points above mentioned reproduced almost exactly the muscular contractions of the epileptic seizures, and seemed to stand for more "centres" than the diagrams of those who have experimented would allow to any such narrow areas.

In the absence of any visible organic lesion it was decided to excise these portions of the cortex. The possibility of a sub-cortical tumor was not ignored, but there was absolutely no evidence of such in any alteration of the vascular supply or of the consistency of the brain tissue. The parts did not bulge into the wound, nor was the color of the gray matter in any way changed. Accordingly Dr. Deaver excised from the region back of the central fissure a portion about twelve millimetres square carrying the incision well down to the white matter. Two smaller portions were removed from the excitable region anterior to the central fissure. Further exploration by means of these incisions failed to detect any tumor. My attention had not been called at that time to the distinction which Franck¹ makes between the faradic excitability of the gray and that of the underlying white matter. This distinction is that the gray matter gives rise to a series of clonic spasms in the related muscles, epileptiform in character, continuing even after the faradism is withdrawn, while the white fasciculi, when faradized, cause a tonic contraction which ceases at once on withdrawing the poles. I am quite positive that the contractions caused in our patient by stimulating the gray matter were epileptiform—and if my memory serves me,

¹ *Léçons sur les Fonctions Motrices du Cerveau, etc., par Le Dr. François Franck, Paris, 1857, p. 107.*

after this lapse of time, the white fasciculi at the bottom of the wound were also touched and caused but a momentary tonic contraction.

The patient's condition after the operation may be briefly epitomized as follows, prefacing with the remark that he was watched by competent observers day and night and the nursing records kept in a book.

It was observed from the first that he slept with his left eye partly open. The legs moved freely and were never paralyzed. The left arm was markedly paretic, lying quite flaccid by his side; he would occasionally raise it by taking hold of it with his right hand. His left face was also paretic. Late on the first night he had his first convulsive movement; it was only a slight twitching of the left side of the mouth which was thus drawn to left side. These twitchings of the face, accompanied occasionally by twitching of the left hand and forearm, continued at intervals during the first six days, when they ceased, and the patient has never had any convulsive movement whatever since. They were not so severe as before the operation, nor so widespread. About the third day there was some stiffness of the fingers, which may possibly be explained by irritation of the white fasciculi during the process of healing of the cortical wound. There was at this time according to the nurse's records, a difference in temperature of the two sides, the left axilla being from one to one and a half degrees higher. After one of his twitching spells the patient spoke of the spells returning, but he never mentioned his aura.

On the fifth day his muscular condition was as follows: The flexors of the wrist and fingers were almost quite paralyzed. The biceps was much weakened. The pronators and supinators were paretic. When told to raise the arm he would reach for it with his sound hand, and when restrained in this he would raise the affected arm with a sort of fling and evidently with the aid mostly of the shoulder and chest muscles. All his attempts to move the paralyzed muscles, especially to close his fist, were accompanied by analogous movements of the right arm. All the muscles of expression of the left face were affected, as well as the left side of the occipito-frontalis. He had control of the orbicularis palpebrarum. When he laughed the muscles of the paretic side appeared to respond almost as well as those on the sound side; which seemed to show that a cortical paralysis is not absolute as far as a bilaterally associated movement is concerned. The patient is right-handed and has never been aphasic.

From about the sixth until the eighteenth day the patient cannot be said to have been at any time in his normal mental state. He became dull, then lachrymose and incoherent, and for a part of the time had marked maniacal delirium with hallucinations of sight and hearing. The surgical condition did not seem adequate to account for this. The operation and subsequent treatment had been conducted with strict antiseptic precautions, and the patient never had a serious rise in temperature. There appeared to be headache at times as he frequently attempted to pull off his dressings. There was at this time much edema of the scalp. While he was at his worst there was some priapism, and one of the resident physicians was confident that the patient had masturbated. I doubt if the patient in his condition at the time was conscious of it. The pupils were dilated and the eyes expressionless. There was once involuntary passage of urine. During his most

delirious and restless stage it was thought that he did not move his left leg as much as the right, but if so, this was the only time the leg was affected. His left face became much more flushed than the right. From this ominous condition he began gradually to improve toward the end of the third week, until he could sit up and so gradually began to get about. By the end of the fifth week he was practically well, and had recovered some of his lost muscular power.

The following memoranda have been made quite recently (three months after the operation) of the patient's condition. He has had no convulsive seizure, whatever, since his convalescence.

Sensory condition. (Patient blindfolded.) In the left, or affected, hand, he feels the slightest touch with the blunt points of an æsthesiometer. There is no retardation. On the forefinger he does not discriminate the blunt points one inch apart, but he tells the sharp points one-quarter inch apart. In the other fingers and on the right hand he discriminates better. With weights varying from *two to twelve* ounces patient is able to tell the heaviest by cutaneous pressure as well on affected as sound side. (The paralyzed hand has a more delicate skin from disuse.)

The patient is not able to distinguish form when an object is placed between his forefinger and thumb; thus he appears quite unable to tell a small square object, a silver quarter, a silver dollar, a small flower, or a penknife. It is evident, however, that this is not a sensory but a muscular defect, because his fingers are still so paretic that he holds these small objects in the most awkward way, and cannot move or twist them about in his fingers; hence he is not able to bring his sensory nerve endings in rapid contact with the outlines of these things. This cannot, therefore, be quoted as a proof that muscular sense is in the motor cortex. His sensation to pain and heat is perfect.

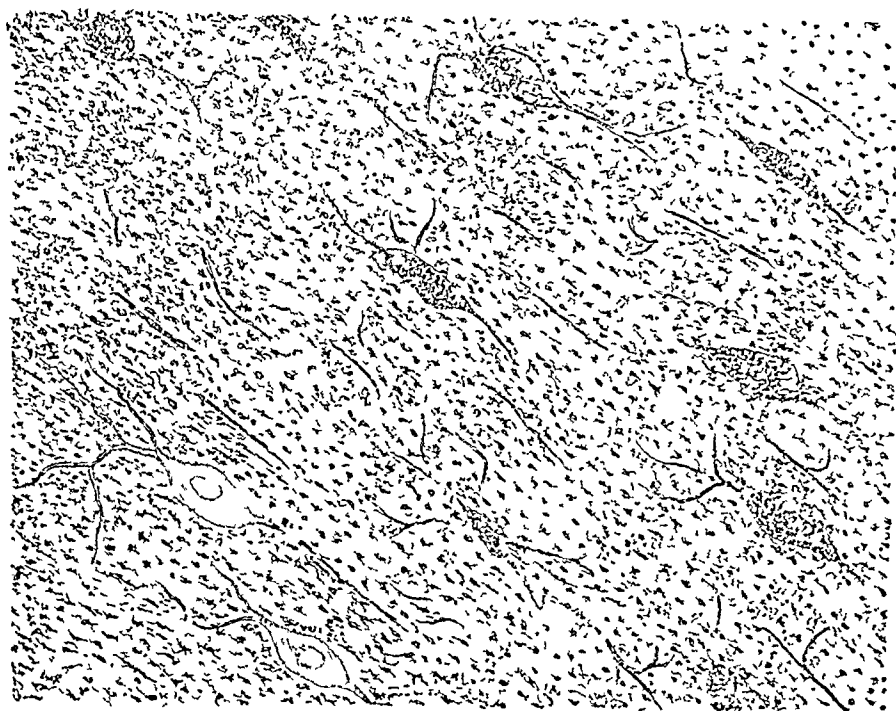
Motor condition. With a dynamometer his right hand registers 130, his left hand 20. He makes a great effort, straining even with his facial muscles. The paretic face is slightly flushed. He says there is no difference in the sweating. In the left face the tactile sense is quick and perfect. He cannot close the left eye by itself, but closes both together—a further evidence that bilaterally associated movements are not lost in cortical paralysis. The left face is still markedly paretic and the tongue deviates to the left. The muscles especially paralyzed in the arm are the flexors of the fingers. The forefinger and thumb are notably weak and awkward. He has good control of the flexors of the wrist. The biceps contracts firmly. He says he has a feeling of weakness about the shoulder, and his arm moves awkwardly, but the deltoid and individual muscles are apparently about normal. The regain of power is rather greater than was expected.

Dr. Allen J. Smith makes the following report of the appearances of the excised tissue:

"Three pieces were referred to me for examination; one governing arm alone and the other two arm and face movements. Stained by Weigert method. These sections from piece governing arm alone (post to fissure of Rolando), each showed numerous foci of infarction, apparently recent and possibly due to some violence to the tissue during operation. There was possibly some degeneration in the cortical substance, but at most very slight. In the large pieces governing arm and face (taken from anterior to fissure of Rolando) there is distinct degeneration of the large

multipolar pyramidal cells, with the same foci of hemorrhage as in the smaller pieces. A number of these large cells seem to be in a condition approaching fatty metamorphosis, and small granular bodies, like fat

FIG. 1.



Microscopic drawing from portion excised posterior to fissure of Rolando, showing granulation and shrinking of large multipolar motor cells (Weigert stain) (Drawn by Dr Allen J Smith)

drops, make up the bulk, which is less than usual, and in most cases shrunken away from the walls of tissue about the cells. These degenerated cells refuse to take the stain as well as their comrades that are undegenerated."

In closing the account of this case it seems proper to offer a few special observations. As far as I am aware, there have been two cases operated on in which no discoverable lesion was present and in which the irritable area was mapped out with faradism and removed. There may, of course, be others. The two to which I refer are one of Mr. Horsley's cases,¹ and one operated on by Dr. Keen, of Philadelphia. The propriety of the operation is to be decided upon in individual cases, and cannot yet be made the subject of a general rule; it must depend largely upon special features, as, for instance, the strictly focal character of the fits, their severity and frequency, and the extent to which they destroy usefulness or jeopardize life. Macewen² discusses the propriety of removing

¹ British Med Journ, April 23, 1887

² British Med Journ, August 11, 1885

large wedges of brain-cortex, and lays much too great stress, it seems to me, upon the evils of producing hemiplegia in trying to cure fits—to which it may be said, in the light of this case that, first, in curing focal epilepsy it may not be necessary to cut out such large wedges as to produce hemiplegia, and, second, the evils of a partial monoplegia are certainly not to be compared with the direful effects of frequently repeated epileptic seizures.

SURGICAL REPORT BY DR. JOHN B. DEEVER.

J. W. G., on June 11, 1888, the day previous to the operation, had his bowels moved freely with a saline purgative; his urine carefully analyzed and examined microscopically, showing it to be normal; and his chest examined with negative results. He was given a warm water bath, followed by a boric acid bath, then the entire scalp was closely shaved, washed with turpentine and scrubbed with soap and water, then washed with ether and alcohol, when it was enveloped in a towel wrung out of 1 : 1000 solution of the bichloride of mercury. Here, I feel justified in saying that part of the success of all operations is attributable to the careful preparation of the patient. During the operation the following day, June 12th, the most strict antiseptic precautions were observed.

Operation, June 12th, 11 A. M. The patient was placed on the table for operation. A hypodermatic injection of one-quarter of a grain of sulphate of morphia was given immediately before the anæsthetic was administered, the object of this being to contract the arterioles and thus lessen the amount of bleeding. Chloroform was administered until the patient was fully under its influence, when sulphuric ether was substituted and continued throughout the operation. In the presence of the neurological staff of the hospital, and assisted by my colleague, Dr. J. William White, I first mapped out upon the scalp of the right side of the head, the seat of operation, the fissures of Sylvius and Rolando by using Reid's lines (see *Lancet*, 1884, p. 359), which I will describe. First, draw a line, which runs from the lower border of the orbit through the centre of the bony meatus of the ear. To find the fissure of Sylvius, draw a line from a point one and one-quarter of an inch behind the external angular process of the frontal bone to a point three-quarters of an inch below the most prominent part of the parietal eminence. Measuring from before backward, the first three-quarters of an inch of this line will represent the main fissure and the rest of the line the horizontal limb. The ascending limb starts at the point indicating the termination of the main fissure—i. e., two inches behind the external angular process, and runs from this vertically upward, for about an inch. The fissure of Rolando is found by drawing two lines from, and perpendicular to, the base line to the top of the head, one passing through the depression in front of the ear and the other through the posterior border of the mastoid process. The fissure of Rolando is now represented by a line drawn from the point of intersection of the posterior vertical line with the line connecting the nasal eminence with the external occipital protuberance, indicating the great longitudinal fissure, to the point of intersection of the anterior vertical line with the line representing the fissure of Sylvius, upon either side of which are the ascending frontal and parietal convolutions containing the centre we wished to remove in this case.

I prefer Reid's lines to Broca's, Lucas Championnière's, Hare's, or Wilson's method of locating the fissures, as I have proven them upon the cadaver to be quite as correct as any of the others, and I think simpler and more comprehensible; and again, as they map out more fissures than do the others, as brain surgery advances they will be more useful. Over and a little in advance of the middle third of the line representing the fissures of Rolando after all the layers of the scalp, including the periosteum, had been dissected up by making a large horseshoe-shaped flap, with its convexity downward and forward, thus favoring drainage, a trephine one and a half inches in diameter was applied to the skull and a section of bone corresponding in size to that of the trephine removed. Thus far both the soft parts and the bone were perfectly normal, there being not the slightest evidence of depression of the latter. The dura mater, which now presented at the bottom of the wound intact and normal, was incised and reflected, thus laying bare the arachnoid and pia mater, both of which membranes to the naked-eye appearances were healthy. Before incising the hemisphere (to make sure we were over the proper area) Dr. J. Hendrie Lloyd applied electrodes which had been wrapped with sublimated cotton, and which was lying in a 1 : 1000 solution of the bichloride of mercury, to the surface of the brain thus far exposed, with the result of bringing about movement of the fingers and wrist but not of the forearm, when I, with a pair of

FIG. 2.

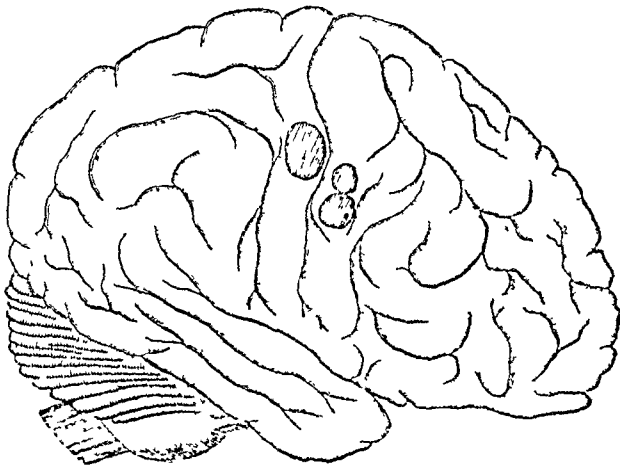


Diagram showing relative position of portions excised. (Drawn by Dr. Allen J. Smith.)

Hopkins' modification of Rongier's forceps, cut away several small pieces of bone from the anterior margin of the opening made by the trephine. Dr. Lloyd again applied the electrodes when the forearm was flexed and supinated, the angle of the mouth elevated, and the face muscles contracted. A saturated solution of boric acid containing four per cent. of hydrochlorate of cocaine was now applied to the arachnoid and pia mater to contract the bloodvessels of the latter membrane. With an ordinary sized scalpel, held perpendicularly, three pieces of brain tissue, each three-quarters of an inch in depth, were removed, one-half an inch

square in size, back of the fissure of Rolando, and two smaller portions anterior to the Rolandic fissure.

The cut vessels of the pia mater were ligated with fine juniper-oiled catgut, and hot water applied to the surface to check the oozing; the latter proved to be very efficient. A few strands of heavy juniper catgut were placed in the bottom of the wound and the flaps of the dura mater approximated over it and sutured with catgut. Again, a few strands of heavy juniper catgut were placed in the wound, resting on the sutured dura mater, the skin flaps approximated and sutured with silver wire. The wound was dressed antiseptically (bichloride of mercury being used), and the patient sent back to the ward.

The temperature of the patient after the operation was 97° Fahrenheit; in the evening of the same day 99°; pulse 98; respiration 15. Ordered milk and lime-water.

June 13. Temperature 99½°, pulse 94, respiration 16. Dressings not soiled; bowels moved slightly. Ordered potass. bromide, gr. xx every four hours.

14th. Dressings slightly stained; wound dressed, when found to be completely sealed. No discharge. Pulse, respiration, and temperature normal.

15th. Dressings not disturbed. No pain. Pulse, respiration, and temperature normal.

16th. Dressings slipped. Wound had to be dressed. No discharge.

17th. Patient not quite so well; is restless, showing some evidence of cerebral irritation. Complains of some pain in the head. Pulse 84, respiration 16, temperature 100°. Wound dressed and found healthy. No discharge. The scalp behind the wound is œdematous. Ordered ice-bag to the head, and calomel, ½, with Dover's powder, gr. ij, every three hours.

18th, 11 P. M. Patient while asleep and dreaming tore off his dressings. Wound dressed, when the inner dressing alone was found slightly stained with bloody serum, otherwise healthy. Scalp still œdematous. Patient's general condition much better. Bowels were moved after the administration of a simple enema.

19th. Wound dressed, six sutures removed, allowing three to remain. The points from where the sutures were removed were touched with solid stick of nitrate of silver.

21st. Patient more restless than the day previous. Pulled at the dressings, necessitating a redressing of the wound, which was found free from discharge, and healthy. Pulse, respiration, and temperature normal.

25th. Patient attempted to remove his dressings, but was not successful. The dressings were removed, when the wound was found to be healed. The three remaining sutures taken out, and the points corresponding to the site of the sutures touched with solid stick of nitrate of silver. The part of the scalp covering the trephine opening was quite prominent, and upon palpation fluctuation was detected. I made an incision into the scalp here at two points, evacuating bloody serum only. I then introduced a small rubber drainage tube and dressed the wound. Pulse, respiration, and temperature normal. Patient complains of no pain; tongue dry; calomel and Dover's powder stopped. Ordered whiskey half an ounce, two grains of quinine every four hours, and also three drops of turpentine, in emulsion, every six hours.

27th. Wound dressed, drainage tube behaving nicely, very little discharge.

28th. Bowels were moved after an enema had been given.

29th. Wound dressed. Still some little serous discharge through the drainage tube. Stopped emulsion of turpentine, but continued with the quinine and whiskey.

July 1. Bowels moved twice during the night. Patient comfortable and doing well in every respect.

2d. Wound dressed. Drainage tube removed.

3d. Three weeks since the operation, patient allowed to sit up.

4th. Bowels moved.

6th. Wound dressed, very little discharge of serum from tract of drainage tube.

12th. Wound dressed. Still a little discharge of serum from tract of drainage tube. No pain or tenderness on pressure. The pulsation of the brain at the centre of the flap covering the trephine opening in the skull is very marked.

17th. Wound all healed. No further dressing applied. Patient entirely well. Walks about the hospital.

The deductions which I would draw from this case are that this, as well as other cases, proves that excision of parts of the brain can be done with, I may say, perfect impunity; therefore, in the case of a lesion the nature of which is doubtful, and which in a short time will destroy the patient's usefulness if not his life, why not here, as well as in the abdominal cavity, make an exploratory incision? I think our success is due, largely, in these cases to the precautions taken in regard to strict cleanliness.

Since Mr. Macewen has practised putting back the button of bone removed in trephining and obtaining union, you may ask yourselves, Why did I not likewise? Notwithstanding I had subjected the large button of bone, as well as the small pieces removed in my case, to the proper treatment, preparing them to be repositied, I did not think it worth while to place back so large a piece, as I had seen this done in the practice of two of my friends, and in both cases it necrosed and had to be removed; neither did I have at hand the proper instrument with which to divide the large piece of bone into small pieces or resolve it to bone-dust. Had I done the latter and placed it in the wound, it would not have been safe, owing to my not having absolute apposition of the flaps of dura mater, in which event, the brain would have been subjected to irritation, from the presence of the small particles of bone. The last examination made of this case, September 14, 1888, by Dr. Lloyd and myself, shows the opening, with the exception of a point at its centre, a quarter of an inch square, to be filled in with bone. At the point referred to very slight pulsation of the brain can be detected. Here we have had regeneration of bone from the periosteum, therefore, I am now well satisfied with the course I pursued and feel sure that before long the entire opening, made in the skull at the time of the operation, will be closed by bony plate.

ACCOUNT OF AN EPIDEMIC RESEMBLING DENGUE.

WHICH OCCURRED IN AND AROUND CHARLOTTESVILLE AND THE
UNIVERSITY OF VIRGINIA, IN JUNE, 1888.

BY WILLIAM C. DABNEY, M.D.,

PROFESSOR OF OBSTETRICS AND PRACTICE OF MEDICINE IN THE UNIVERSITY OF VIRGINIA.

ON Tuesday, June 5, 1888, I was called to see Herbert P., six years old; he had been taken suddenly a few hours before with violent pain in the left side of the chest nearly over the region of the heart. His temperature was 103° , and the skin extremely hot and pungent to the touch; his bowels were rather constipated, but not markedly so; there was no nausea, but very little appetite. His chief complaint was of the pain in the chest, which was excruciating and aggravated by the slightest movement, or by drawing a long breath. Nothing abnormal could be discovered about the thoracic organs, however, on physical examination. One grain of antipyrine was given every two hours until the temperature fell to 100° or the pain was relieved, and one grain of calomel was ordered every four hours. A mustard plaster was applied to the chest and strict quiet was enjoined, though this was scarcely necessary on account of the increase in the intensity of the pain with every movement.

On my visit the next day, I found this patient apparently entirely well, but two other members of the family, aged respectively eight and three years, had violent pain in the left side of the chest, and over the region of the stomach; the pungent heat of skin was very marked in both of these cases; the temperature in each rose to a little over 103° at noon, but was only about 101° at 6 P.M. and there was some sweating, but, singularly enough, the extreme heat of skin was very marked.

By the next day both of these children were well, but two others in the same family were sick; one of them was affected precisely as the others had been, but the other, a little boy about a year old, presented different symptoms. In his case there were two or three attacks of what I suppose from his mother's account was spasm of the glottis followed by alarming prostration. The spasm and difficulty of breathing had passed off before I saw him, but he was still very prostrate, his pulse being 128 and feeble. The prostration lasted forty-eight hours and passed off with profuse vomiting.

There were in this family six children, five of whom had the disease; one, a little girl nearly seven years old, escaped, though she remained constantly with the sick children. (It may be well enough to mention that this little girl who escaped had whooping-cough just a year before, and that, during a violent fit of coughing, she was taken with right hemiplegia and aphasia; she gradually recovered from this, and in the course of two months was apparently well, but a few weeks prior to the appearance of the epidemic she complained of severe headache and of numbness in the right hand and arm, and there was a very marked tendency to call things by the wrong names, and often she could not express herself at all; this lasted only a day or two, and she seemed perfectly well when the epidemic broke out.)

On June 8th, I was called to see a colored girl about seventeen years old; her temperature was 103.6° , her respiration rather quickened, her pulse 90, the skin very pungently hot, and the tongue slightly coated; she had very little appetite, and her bowels had not moved for forty-eight hours; she complained of pain in the left side over the region of the heart, and of some pain in the shoulder on the same side; the pain was aggravated by movement. The attack in this case came on a few hours before I saw the patient, the first symptom being pain in the side which was quickly followed by fever. There was no enlargement of the spleen that I could detect, nor was the liver affected in any way. I was told that there had been three other cases almost precisely like this one in the same family. One of them, a boy fourteen years old, was still suffering with the pain and some fever, but at the time I saw him his temperature was only 101.5° ; the other two children had recovered. I did not see these cases again, but was told that both of those who were sick at the time of my visit were well the next day.

The next case was a young man about twenty years old, a student in the University of Virginia; he was taken suddenly with violent pain in the left side of the chest, which was aggravated by movement or by drawing a deep breath; indeed, ordinary inspiration caused such acute pain that his respirations were shallow and hurried. He informed me that he was taken with slight chilliness, and then the pain and a feeling of constriction across the chest; his temperature was 103.8° , his pulse 100; physical examination revealed nothing abnormal about his thoracic organs; his appetite was poor, but there was not complete anorexia; his bowels were slightly constipated, but this, he told me, was his habit. Turpentine stupes were applied over the seat of pain and fifteen grains of antipyrine were given by the mouth. At 9 o'clock the next morning the pain was very much better—in fact, there was *no* pain except on motion—and his temperature was 99° ; he was given five grains of quinine every two hours until twenty grains had been taken, and was kept in bed. At 1 o'clock P. M., there was a recurrence of the pain and fever just as they had appeared on the previous day, but antipyrine afforded prompt relief to both. At 6 P. M., his temperature was 101° and the pain was only appreciable on movement. These daily exacerbations continued for six days, but becoming less intense each day.

These cases will give a fair idea of the epidemic as it prevailed in and around Charlottesville, Virginia, and the University of Virginia. It is unnecessary to report more of the cases in detail, but I shall refer to others later, in order to illustrate certain features of the disease.

It may be well enough to state, before going further, that malarial affections are practically unknown in this section of Virginia.

The number of cases which I saw during the first ten days of the epidemic was twenty-nine, and of these I took full notes. I saw at least as many more subsequently, but, being extremely busy with the final examinations of the medical students, did not take notes of them.

The disease, as will be seen from what I have already stated, was distinctly *epidemic*. It was *not contagious*, or, if so at all, only in a very slight degree. I shall give my reasons for this opinion further on.

Two of my colleagues in the University of Virginia, Dr. Cabell and

Dr. Towles, saw cases of the disease, and Drs. Randolph, R. W. Nelson, H. T. Nelson, Magruder, Flannagan, and others, of Charlottesville, had abundant opportunities for observing the affection, and all agree that it is a disease with which they had not previously met, and which had not been described.

I propose now to describe the characters of the disease as I saw it.

1. **ONSET.**—In every case which I saw the onset was *sudden*, and usually violent. One little girl, about ten years old, the daughter of one of my colleagues, was taken suddenly, on her way home from church, with violent pains in the side, and within fifteen minutes there was very decided heat of skin. In another instance the pain came on so suddenly that the parents of the child did not credit her complaints until the fever came on half an hour afterward, and was attended with so much stupor as to occasion great alarm.

2. **SYMPTOMS.**—In every instance pain was one of the first, if not the first symptom, and the rise of temperature appeared shortly thereafter. It will be well, however, to examine the different symptoms in detail.

a. The nervous system. In two cases there was a severe chill, which immediately preceded the pain, and in several others there was chilliness. The pain, however, was, by far, the most striking feature as far as the nervous symptoms were concerned. In *character* it was usually sharp and lancinating, and was much more violent when the patient attempted to move or to draw a deep breath. (So agonizing was this pain that it was nicknamed the "devil's grip" by a sufferer from the disease in Rappahannock County, Virginia, and this name became a common one there afterward, as I was told by Dr. W. F. Cooper.) There was slight tenderness over the seat of pain in every case, but it was not nearly so marked as the pain itself. The *seat* of the pain was usually in the left side of the chest just below the nipple, but in some of the cases there was pain in the opposite side, or in the shoulder of the opposite side; and in a few of the cases, especially in children, there was pain in the abdomen, usually in the epigastric region. In three of the twenty-nine cases the pain changed from one point to another; in the case of one of my own children, for example, the pain was first in the left side, and was attended with a temperature of 103° ; this lasted for twenty-four hours, when they both subsided; some hours later there was a sharp attack of pain in the right side, without rise of temperature.

Headache occurred in nearly every case and was usually severe. *Backache* was present in about half of the cases. There was no aching in the limbs, as a rule, even when the temperature was high, though it was occasionally present.

b. The circulatory system. The pulse was always increased in frequency, ranging usually from 90 to 110; in the cases of some of the children it sometimes reached 120 or even a little greater degree of

frequency. Physical examination of the chest revealed nothing abnormal in the condition of the heart itself.

c. The respiratory system. The respirations were slightly increased in frequency in every case, and were rather shallow, but this increase seemed to be due entirely to the pain caused by drawing a deep breath. There was no cough, and no expectoration, nor were any evidences of disease to be found on physical examination. In two cases—the patient in each being a young adult—there was a feeling of great constriction of the chest. In one case—that of a child a year old which I have previously mentioned—there was, I suppose, from the account which I obtained from the mother, some spasm of the glottis, but I did not see the child during any of the attacks.

d. The digestive system. The digestive symptoms were, as a rule, not marked. In nearly all of the cases the appetite was poor, but in only two or probably three was there complete anorexia; thirst was always complained of during the febrile stage. Vomiting occurred in four cases, but in no case was it persistent or troublesome, and in two cases (children) it occurred just at the close of the fever, the patient having a profuse sweat and falling into deep and refreshing sleep immediately afterward. As a rule, there was slight constipation, and in two cases this was quite troublesome, but in a few cases there was slight diarrhœa; in two cases, indeed, the diarrhœa was quite severe, but I think it probable that it was due in each instance to some imprudence in diet. In the case of a little boy, four years old, there was violent spasm of the intestines, which could be distinctly felt through the abdominal walls during the paroxysms as hard knots.

e. The temperature. In every instance there was more or less fever usually ranging from 102° to 104° . In but one case was the temperature below 101° . And even in that it is probable that the temperature had been higher for a short time before I saw her. The striking features about the temperature were its rapid rise and its short duration. In every case, so far as I could ascertain, the fever attained its maximum within an hour of the time that the pain was first felt, and in only three cases did it last more than twenty-four hours. It is worthy of note that in each of these three cases the patients were fatigued by hard study. In two of these cases the fever was intermittent in character and came on at about the same hour each day; in the third it was remittent. None of these three patients, who were students of the University of Virginia, had ever suffered from malaria; one was from Portland, Oregon; one from near Bristol, Tennessee; and the third from Loudon County, Virginia.

f. The cutaneous system. I have already mentioned the most prominent of the cutaneous symptoms—the pungent heat of skin. I have never seen this more marked in scarlet fever than it was in some of these cases, and in one instance, a lady who had nursed scarlet fever

patients expressed great anxiety lest she might again have to contend with this disease, her apprehensions being caused by the extreme heat of the skin. Even when there was some perspiration this heat of skin was marked. During the earlier hours of the attack the skin was dry, but later on, usually about ten or twelve hours after the outset, there was some perspiration and occasionally a very profuse sweat.

g. The urinary organs. In none of my cases was there any evidence of disturbance of the urinary organs, except a slight diminution in the quantity of urine discharged and a slightly darker color than normal—changes which are common to all forms of fever. No chemical examination of the urine was made, however, except for albumin.

3. CAUSES.—The first question which demands an answer is—Is this disease contagious? And it is not easy to give a positive answer at present. It will be observed that there were five cases in one family (of six children), and four cases in another family; in a third family all the children, four in number, had the disease, and it is especially worthy of note that the four children just mentioned had dengue in Texas a year or two ago. As a general rule, it attacked *all* of the children in a family. But in a very large proportion of the cases which I saw there was *no* evidence of contagion. Sixteen of the twenty-nine patients were students in the University, and among these sixteen there was not a single instance in which the disease could be fairly attributed to contagion.

In one house containing eight large rooms there were sixteen students; these young men were constantly together and yet there was but *one* case in that house. In another similar building there were two cases.

It may be stated briefly that the cases among the students were scattered in different parts of the University buildings, some of which are half a mile apart, there being generally but one or two sick men in each neighborhood. Nor could the extension of the disease be traced to the association of the students in the different classes. For example, three of the patients were medical students, five were law students, one was studying civil engineering, and seven were students in the different academic schools. The disease then, if contagious at all, would seem to have been far less so than most of the contagious diseases.

Age was undoubtedly a predisposing cause; it was far more common among children than among adults. I saw no case among the adults in those families in which the children were sick with the disease. This, it will be observed, is entirely different from dengue as it prevailed in Texas and other southern States some years ago. The weather was unusual for the month of June at the time of the first appearance of the epidemic; both days and nights were cooler than usual at that season of the year—the nights being relatively much cooler than the days.

No causative connection could be traced between the previous condition of health and the attack, in any case; but among the students

those who were broken down by hard study had the disease in a much more troublesome and intractable form than their less studious fellows.

There was nothing in the immediate surroundings of the patients which could have caused the disease. The water-supply of Charlottesville and the University is pure and abundant, and the sewerage system of the University is well-nigh perfect. Nor was there anything in the *soil* to which it could be attributed. Indeed, the epidemic prevailed just as extensively three or four miles out of town, where the surroundings were totally different, as it did in the town or the University.

4. DIAGNOSTIC FEATURES.—The striking features of the epidemic here were: (a) The suddenness of the onset. (b) The seat and character of the pain. (c) The short duration of the fever. I have already mentioned these features sufficiently in detail. The disease which, it seems to me to resemble most, is dengue; but it differs from it in certain striking particulars, as shown by the following comparative tables:

<i>In Dengue.</i>	<i>In the Epidemic under Consideration.</i>
Violent pain in the limbs.	Rarely pain in the limbs.
Elderly people, as well as children, commonly affected.	Confined to children and young adults.
Joints are inflamed.	Joints not inflamed.
There is an eruption.	No eruption.

If Dickson's statement be correct, that one attack of dengue is protective against future attacks, we have a further evidence that the epidemic described in this paper was not dengue, in the fact that four at least of the patients to whom I have alluded had dengue in Texas a year or two ago. The father of these children—a very observant man—who not only nursed his children through their attacks of dengue, but had the disease himself, assures me that while the epidemic which I have described resembled dengue in some respects, it was in others totally dissimilar and was clearly a different affection. The breakbone fever which prevailed in Charleston, S. C., in 1880, resembled the epidemic here in some respects, but there were striking differences; for example, Forrest states¹ that “a symptom present in the majority of cases was a cutaneous eruption;” in not one of the cases which I saw or of which I heard during the whole epidemic was there any eruption present; nor was there in the Charleston epidemic the same uniformity as to the seat of pain as was observed here in nearly all of the cases; there was, it is true, in many of my cases, pain elsewhere than in the cardiac region, but “the pain,” as the patients themselves called it, was located there, and that elsewhere was comparatively slight. Then in the Charleston epidemic “there was no distinction of age, etc.,” I did not see or hear of a case here in a person over twenty-five years of age. No one can read the accounts of dengue as it has prevailed in dif-

¹ AMERICAN JOURNAL OF THE MEDICAL SCIENCES, April, 1881.

ferent places and at different times, however, without being struck with the great difference in the symptoms in the different epidemics. It seems to me possible therefore, but far from probable, that the epidemic which prevailed here in June last was dengue of which the symptoms were modified by climate.

5. DURATION AND PROGNOSIS.—The duration of the disease was very variable; in some cases a single paroxysm of twelve hours' duration would end the trouble, while in others it lasted for days, and in two cases as long as three weeks; the pain and fever recurring daily and usually at the same hour of the day. I have already stated that there was no history of malaria in any of these cases. There was not a single fatal case, but several of the patients whom I saw were left in a condition of extreme prostration for two or three weeks after all fever had ceased, and they would suffer pain in the affected side whenever any unusual exertion was attempted.

6. TREATMENT.—The indications of treatment in every instance, so far as the symptoms were concerned, were plain enough—to relieve pain, to reduce temperature, and to prevent a recurrence of the paroxysm.

For the relief of pain antipyrine was usually employed, in doses of from two to twenty grains, according to the age and weight of the patient, and the dose was repeated every two hours till the pain was relieved. It rarely failed to give relief within half an hour from the time of administration of the first dose. In a few instances morphia was administered hypodermatically, and opiates, generally in the form of paregoric, were given to young children. One advantage possessed by antipyrine over the other remedies which were given for the relief of pain, was that it fulfilled the second indication, reduced the temperature; furthermore, it did not constipate or cause nausea as opiates often do. In children a full bath, as hot as the little patient could bear, usually afforded prompt relief, but other external applications, such as poultices, mustard plasters, or other counter-irritants, did little or no good.

For the slight constipation, calomel was usually employed, and after the paroxysm subsided or was relieved by the remedies which I have just mentioned, quinine was given. The dose given to a man eighteen or twenty years of age, was five grains every two hours till twenty or occasionally thirty grains had been taken; to children smaller quantities were, of course, administered. I have already mentioned several times the pain upon motion or exercise which persisted in many cases for days or weeks, in a few instances I gave salicylate of sodium with the hope of relieving this annoyance, but there was no appreciable effect.

Antipyrine to relieve pain, calomel to relieve the constipation, and quinine to prevent a recurrence of the paroxysm, were the measures which gave the best results, and late in the epidemic the patients would often treat themselves with these remedies without sending for a physician.

REVIEWS.

A CLINICAL ATLAS OF VENEREAL AND SKIN DISEASES, INCLUDING DIAGNOSIS, PROGNOSIS, AND TREATMENT. By ROBERT W. TAYLOR, A M., M. D., Surgeon to Charity Hospital, New York, etc. Illustrated with one hundred and ninety-two figures, many of them life-size, on fifty-eight beautifully colored plates, also many large and carefully executed engravings through the text. Parts I. and II. Venereal Diseases. Philadelphia: Lea Brothers and Co., 1888.

A DISTINGUISHED American artist has lately declared that no one can by the aid of words alone so graphically describe a picture to even the most skilful artist, that the latter can, without other knowledge, make even the faintest attempt at a reproduction of the original. Here one may estimate the disadvantages of the didactic over the clinical methods of teaching medicine. There are few clinical teachers who surpass in advantages the best portraits of disease. It is a marvellous matter that the Atlases are not preferred, as they should be, above all the treatises. It is, however, true that they are not. The Atlas before us furnishes a fund of information of the most practical sort that is quite inaccessible to one who has not enjoyed a large clinical experience and who is compelled to rely on the printed page for the knowledge required in venereal and cutaneous disorders.

In this matter of eye-instruction as compared with ear-instruction, the savage is in advance of the scientist. Mr. Edouard Muybridge has photographed an Indian blanket sent by LaFayette to France in the last century, on which horses are represented with the anatomical accuracy displayed on the frieze of the Parthenon, and recently demonstrated to be faithful to nature by Mr. Muybridge's remarkable photographs taken instantaneously of animals in motion. One careful study of a faithful portrait of disease is often worth more than reading a learned essay on the same theme. The former is like the unconsciously acquired familiarity with the features of an acquaintance; the latter, like reading his biography.

Dr. Taylor's admirable Atlas is so suggestive on many of the themes that interest the modern student of medicine, that one might readily be tempted to deliver a clinical lecture on the basis of the well-drawn figures and carefully tinted illustrations which its pages spread before the observant eye. Here are exhibited almost every one of the results of the pathological processes occurring in the skin and the mucous surfaces of the body. There is scarce a figure in any plate that does not surpass, in value to the student, all the writings of Boerhaave and some of the more modern treatises by less distinguished men. It is easy to understand, as we glance at the portraits thus faithfully drawn, why Mr. Seymour Haden was so earnest in impressing upon his students in surgery the importance of acquiring the art of drawing with a view to fixing more indelibly in the memory the features of external disease. "The

modern Rembrandt," as he has been called, confesses to having himself first engaged in his favorite work of etching merely as an aid to his surgical work.

The illustrations before us are new and old, and we are in no fear of contradiction when recommending the old with the new. Just in proportion as the old are faithful, are they as good as, or better than, the new. It is now nearly a half century since Rayer¹ first gave his fine plates of skin and venereal diseases to the scientific world, and was followed by Trüstedt and Behrend,² who, with Dr. Taylor's commendable foresight, availed themselves of the best that had then preceded. Fifty years in one sense, is not a long period; but in another it constitutes a cycle, as, for example, in measuring the progress of the world's advance in knowledge. When Rayer first published his plates, there was no electric telegraph in operation; and the entire modern system of postal transmission was not yet conceived in the fertile brain of Sir Rowland Hill. The whole pitiful career of the "Little Napoleon" was yet to be a part of history. The works then written and studied as authoritative in medicine are now, save for the collector of medical bric-a-brac, worth simply the price of old paper per pound! And yet, wonderful to relate in comparison, but yet only truth to tell (for the truth of to-day is the truth of to-morrow if only it be a real truth), Rayer's faithful plates of external disease, copied, quaint costumes and all, by Trüstedt and Behrend, are not shown to be false by the brilliant portraits and striking illustrations of disease furnished by our latest author! If one looks with care, for example, at the excellent representation here given (Part II., Plate XIV., Fig. 1) of the small pustular syphilide, he will find there only the same syphilis portrayed by the eminent Frenchman a half century before! But if he studies it closely and with the careful scrutiny of the medical artist, he will recognize a more definite purpose to exhibit the exact shade of color, size, pustular apex, and physiognomy of the individual lesion, with a pre-Raphaelite minuteness of detail, the general effect being to produce a picture of the skin in disease which can scarcely be surpassed in its value when one considers the needs of the physician.

Dr. Taylor's Atlas can be well commended to the profession as a credit to American medical literature. The publishers deserve special praise for the elegance of the typography and the care taken to produce the colored plates with the most artistic results.

J. N. H.

KLINIK DER VERDAUUNGSKRANKHEITEN. Von DR. C. EWALD, Professor e. o. an der Universität, dirigirender Arzt am Augusta Hospital zu Berlin.

II. DIE KRANKHEITEN DES MAGENS. Berlin, August Hirschwald, 1888.

DISEASES OF DIGESTION. By DR. C. EWALD. II. THE DISEASES OF THE STOMACH.

THIS work occupies the middle space in a series of three of which the first, the *Physiology of Digestion*, has already appeared, while the last,

¹ *Traité des Maladies de la Peau*, par M. Rayer, etc. Paris, 1835.

² *Ikotographes Darstellung der nicht-syphilitischen Hautkrankheiten*, mit darauf bezüglichen systematischem Texte, unter Mitwirkung des Herr Gehelnrath Dr. Trüstedt und Dr. Fred. Jakob Behrend, Leipzig, 1837.

the *Diseases of the Intestine*, is, as yet, in embryo. It consists of twelve lectures occupying 431 octavo pages, to which the term "practical" is peculiarly applicable. Beginning with a description of the mechanical measures employed to obtain a sample of the stomach contents, the author next describes their chemical investigation. The former are so well known as to render unnecessary their detached description, but it is important to observe that Ewald deprecates the employment of suction, whether by rubber bag or piston, for the purpose of drawing the stomach contents into the tube. Observing that during the act of coughing they are ejected through a tube introduced into the viscus, he was led to employ abdominal pressure with the object of obtaining the requisite sample, and found it amply sufficient.

To obtain accurate results the examination of the gastric secretions should always be made under precisely similar conditions. This rule, which would appear to be self-evident, has not always been observed, and to this oversight are to be described the discrepant statements of various investigators. Ewald's plan is to administer to the fasting patient a test-meal (*Probefrühstück*) composed of a certain quantity of white bread (*Semmel*) and water, or weak tea. Such a meal contains albumin, sugar, starch, fat, salts, and extractives, and is very soon reduced to a fluid or semi-fluid condition, so that a portion of it may be readily withdrawn by the stomach tube. In so far as its acidity is concerned, the normal digestion of this test-meal may be divided into three stages. A few minutes (ten to fifteen) after its ingestion it is acid, this reaction, which continues about three-quarters of an hour, being due to lactic acid. Then begins a stage in which, together with lactic, hydrochloric acid may be detected. Finally, the lactic acid disappears and normally after the lapse of an hour only hydrochloric acid is found. It has been supposed that the presence of organic, especially lactic, acid in the stomach was always pathological, but late researches, especially those of Ewald and Boas, have shown that, in the first stages of digestion, an organic acid is always present, but the presence of such acids in a late stage of the process is thought to be of pathological import.

Our author gives a list of the various tests, mostly aniline dyes, employed to detect the presence of free hydrochloric acid in the stomach, but believes they are all thrown in the shade by the recently discovered phloroglucin-vanillin test of Günzburg. A full description of this, one of the most important tests employed in clinical medicine, may be found in the *Medical News* of January 14, 1888.

It is an interesting fact, pointed out by Ewald, that Golding Bird, in 1842, was the first to examine the contents of the stomach in a case of pyloric cancer with dilatation, with a view to determine the presence or absence of free hydrochloric acid. He found the free acid present in considerable quantity "during the more irritative stage of the disease," and, as the strength of the patient diminished, it gradually decreased, while, in corresponding proportion, the inorganic acids increased. Bird's researches seem to have been entirely overlooked by his countrymen.

The frequent absence of hydrochloric acid from the gastric secretions, in cases of cancer of the stomach, is believed by Ewald to be due, not to any mystical influence exerted by carcinoma upon the production of this acid, but simply to concomitant inflammation or atrophy of the gastric tubules. An interesting case of pyloric cancer is reported, in which, during life, free hydrochloric acid was constantly found in the

stomach contents. At the autopsy the cancer was found to be strictly localized, and the mucous membrane for the most part intact. The views of Ewald, with reference to the diagnostic value of the absence of hydrochloric acid in cases of gastric cancer, may be summarized in the following words: As a rule, there is no free hydrochloric acid in a cancerous stomach. Unfortunately, the value of this negative diagnostic sign is impaired by the fact that free hydrochloric acid is absent in certain other affections, such as atrophy of the stomach, amyloid degeneration, and mucous catarrh. On the other hand, the presence of hydrochloric acid is strong evidence against the existence of gastric cancer, for cases, such as the one just referred to, are so rare as to be of little diagnostic weight.

The fact that carcinoma of the stomach may be simulated by grave forms of hysteria, is emphasized and illustrated by reports of cases. It seems, says the author, scarcely possible to confound the two conditions, and yet cases are encountered in which, after long observation, the diagnosis is uncertain. Hysterical cases have even been encountered in which, with all the subjective symptoms of gastric cancer, there has eventually appeared an apparently pathognomonic tumor, said tumor being composed of the patient's own hair which she has swallowed.

The compensatory power possessed by the different sections of the digestive tract is dwelt upon and well illustrated by reference to a case under observation for three years, in which, although the patient continued to enjoy fair health, repeated examinations of the stomach contents demonstrated the absence both of pepsin and hydrochloric acid. The important part assigned by nature to intestinal digestion, coupled with the fact that it may entirely supplement the action of the stomach, has led Jaworski to attribute a subordinate rôle to the stomach, which he regards as a species of warm chamber, in which the food is detained for a time prior to its delivery to the intestine. This view reminds one of the Hippocratic theory of the coction of food by animal heat.

In non-dilatable strictures of the œsophagus gastrostomy is urgently recommended as the only means of preventing death from starvation. The operation is, in itself, attended with little danger, and patients seldom refuse to submit to it. Out of five to whom it was recommended by Ewald, only one declined to undergo it, and he was a Russian general who preferred death at St. Petersburg to a surgical operation in Berlin. Detailed directions concerning the operation are added by Sonnenburg. Minute details are given with reference to the diet of the gastrostomized patient. After gastrostomy, although the obstacle to the introduction of food is surmounted, the dilatation of the œsophagus remains and constitutes a species of incubator, in which saliva and mucus undergo decomposition, which is manifested by fœtor of the breath and the regurgitation of fetid fluid. Under such circumstances the œsophagus must be washed out by means of a tube through which are passed solutions of salicylic acid, thymol, resorcin, borax, etc. The same substances may be swallowed, and Ewald has also prescribed small quantities of brandy, of which the alcohol is an excellent disinfectant.

The important subject of dilatation of the stomach is considered under the head of stenosis and stricture of the pylorus, although, it is scarcely necessary to say, the author divided cases of dilatation into two groups: 1st, those caused by mechanical obstruction; 2d, those due to

asthenia, or *akinesia* of the stomach, a condition liable to arise in the course of anæmia, various nervous affections, exhausting acute and chronic diseases, etc. In the treatment of dilatation, as adjuvants to lavage, upon which, of course, great stress is laid, massage and faradization are recommended. Until recent times there was no certain means of determining whether or not faradization of the abdominal walls gave rise to contraction of the stomach. In a case reported by Pepper (*Philadelphia Medical Times*, May, 1871), to which reference is made, the contractions of the stomach which were distinctly visible, could not be excited by faradization—*i. e.*, visibly excited. At the present day, by the use of salol, we have a more certain test of the motility of the stomach. This substance, a combination of phenol and salicylic acid, remains unaltered in the acid secretions of the stomach, but no sooner does it enter the duodenum than it is decomposed and salicylic acid appears in the urine. Under normal circumstances, salicylic acid may be detected in the urine in from forty to sixty minutes after the ingestion of one gramme (fifteen grains) of salol. By means of this ingenious test, Ewald and Sievers have been able to demonstrate that the passage of the stomach contents into the duodenum is hastened by the application of electricity to the abdominal walls. Contractions would, doubtless, be more certainly excited by passing one of the electrodes into the stomach and placing the other upon the abdominal walls, or within the rectum, so that the whole intestinal tract would be traversed by the current.

Ewald believes that much is to be hoped from surgery in the treatment of stomach diseases. He refers to the forcible dilatation of the pylorus, in cicatricial contraction, twice successfully performed by Loreta, of Bologna; and thinks it probable that, in cases of dilatation, a piece of the organ might be excised with benefit.

With reference to the value of statistics as to the frequency of this or that symptom in cases of cancer of the stomach, his remarks are generally applicable to all similar arithmetical work. "Even supposing," says he, "that we have the figures in mind, who will assure us that the case before us is one that comes under the rule, and not an exception?"

The foregoing remarks will serve to give an idea of the scope of this excellent work. The prevailing impression, after the reading of each lecture, is that the subject has been handled in the most skilful manner. The style is clear and terse, and typographical errors are remarkably few. The only ones noticed were in a footnote on page 179, where occurs the following obscure reference to a case reported by Storer of Boston: "Colloid disease of the entire stomach with wery symptoms." Again, on page 83, a catheter à *demeure* is spoken of. The word should be *demeure*, without any accent.

The quotation with which the work concludes expresses most happily the spirit which animates its every page—

"Uti ratio sine experimentis mendax,
Ita experientia sine ratione fallax."

F. P. H.

ANÆSTHETICS, THEIR USES AND ADMINISTRATION. By DUDLEY WILMOT BUXTON, M.D., B.S., Member of the Royal College of Physicians; Member of the Royal College of Surgeons of England; Administrator of Anæsthetics in University College Hospital, the Hospital for Women, Soho Square, and the Dental Hospital of London. 12mo. pp. xii. 164. London: H. K. Lewis, 1888.

A GOOD manual of anæsthetics, a treatise at once concise, precise, and practical, would be a welcome addition to medical literature and an especial boon to the student. In the effort to supply such a work the author of this little book has been tolerably successful. It is written from the standpoint of practical life, under a strong feeling that the administration of anæsthetics deserves more attention and study than it receives, and that for satisfactory use of these agents both knowledge and skill are necessary. It is scientific in spirit and scrupulously non-partisan. Still, with very much for commendation, there are features which might have been better. Nitrous oxide occupies as much space as chloroform and more than ether. The chapter on the less-used anæsthetics might well have been omitted; amylene belongs to the past, and the record of ethylene is not such as to encourage further trial. To say the same of bromide of ethyl would probably arouse dissent here, and it is mentioned only to call attention to the fact that the author has omitted any notice of the marked perturbative influence of this agent upon the heart's action. But the gravest fault to be found with the book is precisely one which would not be expected from the opportunities enjoyed by the author, as set forth in the title page, for practical acquaintance with his subject. Instead of that honest dogmatism which comes from experience and which is so valuable in a teacher, we have too frequently the indefiniteness of general statement, or the preface of "some find" things thus and so, or "it is said" that such a thing "may be tried." This in connection with some of the most important points relating to the subject is a grave fault. As an instance the following may be given:

"Where the kidneys are much damaged and there is considerable danger of suppression of urine, ether is by many held to be contraindicated. Certainly in many instances no such untoward result has been brought about; still, perhaps, it is well to substitute the A.-C.-E. mixture for ether, for those patients who are the subjects of renal disease."

In this country the doctrine that disease of the kidneys is a contraindication to the administration of ether, first taught by Emmet, is, we believe, fully accepted, nor is it considered necessary that these organs be "much damaged." The student would perhaps like to know how he is to recognize the presence of danger of suppression of the urine.

Many instances of indefinite statement could be selected, but it is a pleasanter task to note points for commendation. In the choice of an anæsthetic the author considers: 1, the condition of the patient; 2, the necessities of the operation. In the chapter on ether, eight conditions are given in which this agent should not be used. We find no decided expression in favor of or against either of the individual anæsthetics, yet it is easy to read between the lines that chloroform is not a favorite. It is a significant fact that it is not mentioned as a substitute in the

quotation already made. So, also, is the statement that the men who have had most to do with chloroform have been occupied in trying to find some substitute for it. Snow introduced amylene and tried ethylene, and Clover devised the combination of nitrous oxide followed by ether, doubtless the safest anæsthetic process, but requiring complicated apparatus, and, therefore, not adapted to private practice. No exception can be taken to the statement that anæsthetics stand, as to relative mortality, in the order—nitrous oxide, ether, chloroform; but the figures to support this statement might have been spared. There is, and can be, no statistical basis of relative mortality because the number of administrations cannot be obtained. The friends of chloroform will be encouraged by the statement here made that there have been 36,500 administrations of this agent at the Edinburgh Infirmary during ten years, with but one death.

We are glad to find here the table, from Snow, showing the different percentages of chloroform vapor in air at different temperatures, a point often overlooked by writers, but which should never escape the attention of the administrator. At 60° F. air carries twelve per cent. of chloroform; at 80° twenty-six per cent., or more than double, and a range of temperature over these points occurs from season to season, and may occur even from day to day.

With the author's doubt as to there being any special immunity from disaster with chloroform on the part of children, we are fully in accord. Elements of safety there are in this class of subjects, but absolute safety, although often taught, is not supported by facts, and while we admit, with him, that children run a risk with chloroform are not prepared to accept the view that it is "probably as great" as with adults. One of the leading journals of this country contains, within the present year, two reports of the narrow escape of children from chloroform narcosis.

Especially worthy of praise is the plainness with which the danger of partial anæsthesia is presented. Having been an urgent advocate of this danger, many years before it was recognized, as it now is, by the best authorities, we still frequently see the necessity of its promulgation in directions to operate during the early stage of anæsthesia, "after a few whiffs" of the agent. As the author well says, "nothing can be more prone to produce fatal syncope." Indeed, the plain truth is here fully recognized that by partial anæsthesia danger is increased.

"Under these circumstances, too, it must be remembered that the heart is peculiarly liable to reflex inhibition, as vaso-motor paralysis occurs antecedently to loss of conduction along the sensory tracts of the nerves and cord."

In regard to death from anæsthetics, most important is the distinct recognition of the facts that it sometimes takes place under ether by failure of the heart's action being the first step, and under chloroform by cessation of respiration. Instances of each are on record, yet the lethal action of ether on the heart has been strenuously denied. The subject of death from chloroform is not as satisfactorily presented as it deserves. The one great fact of irregularity of action of this agent is not emphasized as it should be. The amount in the blood is not the only point; it kills sometimes at the very beginning of inhalation; it proves suddenly fatal to those who have taken it safely before.

Having used the A.-C.-E. mixture almost exclusively for surgical anæsthesia ever since it was first recommended to the profession—now twenty-

five years ago, we looked over the chapter on "anæsthetic mixtures" with unusual interest. It does not bear that evidence of practical acquaintance with this branch of the subject which gives value to what the author has to say. It is stated that the A.-C.-E. mixture "needs careful watching;" and we ask if it is herein different from any other anæsthetic? It is also stated that deaths have occurred during its use, but facts to support the statement, or references to authorities are lacking. A careful scrutiny of periodical and other literature has yielded but a single fatal casualty with this mixture.¹ It is with regret that we find repeated here the objection to this mixture based on the different rates of evaporation of its three components. This is a laboratory objection transferred to the clinical field and will not bear examination.

Mixed narcosis, as produced by the combined effect of morphia and chloroform, is mildly endorsed, and the addition of atropia to the morphia given hypodermatically before the inhalation, is very justly considered of great value. The author gives Kappeler's adverse opinion as to the combined effect of ether with morphia, and expresses doubts of its sound clinical basis. "Certainly in cases at University College Hospital in which the method was employed no great struggling or inconvenience was observed." A very considerable experience with the combination of morphia and atropia preceding the A.-C.-E. mixture, which is half ether, has failed to give any evidence of the correctness of Kappeler's views upon this point.

The chapter on anæsthetics in obstetric practice is very brief and, we regret to say, not worthy of the important subject considered. We refer to it only for one or two points. On page 19 the author says "chloroform can be in no way deemed freer from liability to danger in childbirth than at any other time." On page 111, considering the objection that this agent increases the mortality of mothers and children, he says, "statistics certainly negative this statement." The author may reconcile the statements. The truth is, that the clinical experience of the world has shown a wonderful immunity to accidents from chloroform on the part of the parturient woman. So marked has this been that numerous and ingenious theories have been devised to explain the striking but happy fact. We wish the author had told us in this chapter why, "in primiparæ, chloroform must be given very moderately."

We trust that a new edition of this little work will be prepared, which, abbreviated in some portions and extended in others, will make an excellent manual for the student.

J. C. R.

INTRACRANIAL TUMORS. By BRYON BRAMWELL, M.D., Lecturer on the Principles and Practice of Medicine in the Extra-Academical School of Medicine, Edinburgh. With 116 illustrations. 8vo. pp. xiv. 270. Philadelphia: J. B. Lippincott Co., 1888.

It is always interesting to read a work based upon the careful clinical and pathological observations of a man of wide experience, for it is sure to contain original views and to form an addition to the knowledge of

¹ Reported by Dr. Morton, AMER. JOURN. MED. SCIENCES, October, 1876, p. 415.

the subject treated. Dr. Bramwell has chosen a subject of special importance at the present time when the claims of cerebral surgery in the treatment of intracranial tumors are being urged and discussed, and as this is the only monograph in English upon the subject it will be widely read.

The first half of the book is devoted to the symptomatology of brain tumors in general. Clinically cases may be divided into four classes: (1) those in which no symptoms are present; (2) those in which general symptoms of an intracranial tumor are found but in which there are no symptoms indicated of its exact site; (3) those in which the symptoms indicate not only a tumor but its exact location; (4) those in which there are distinct indications of derangement or disease of the intracranial contents, and in which the symptoms may be due to the presence of an intracranial tumor but are not typical and characteristic of that condition. Each of the distinguishing general symptoms of brain tumors is carefully discussed, viz., headache, vertigo, vomiting, and double optic neuritis. In regard to the last, the author holds that the affection is not always produced in the same manner. He admits the possibility of a descending neuritis, but inclines very strongly to the Leber-Deutschmann theory that increased intracranial pressure combined with some irritating substance in the cerebro-spinal fluid sets up the neuritis, though he admits the hypothetical nature of this substance. The chapter on optic neuritis presents the subject clearly and states concisely the various theories as to its cause. The localizing symptoms are then detailed briefly but clearly, the chief facts being stated and fuller discussion postponed to the section in which the diagnosis of the localization of the tumor is treated. In this section some of the most recent discoveries seem to have been overlooked—*e. g.*, the discovery that the cuneus is the visual centre, but as the book is based on lectures delivered a year ago this is not surprising, for progress in cerebral diagnosis is very rapid.

The chapters on differential diagnosis are well written. Three questions are considered separately: 1. Is there an intracranial tumor? 2. If so, where is it situated? 3. What is its pathological nature? Under the first question the differentiation of Bright's disease, lead encephalopathy, hypermetropia with anæmia, atrophy of the brain, migraine, hysteria, meningitis, cerebral abscess, and hemorrhage from cerebral tumor are carefully discussed, and some difficulties cleared up. The only criticism which may here be offered is that in some cases two or more of these conditions are present, as well as cerebral tumor, and in such cases diagnosis becomes very difficult. This section, however, will be of service to the general practitioner as well as to the neurologist, as it is a suggestive one.

In considering the second question, the subject of cerebral localization is presented concisely, due importance being given to the necessity of separating direct local symptoms from indirect or pseudo-localizing symptoms produced by disturbances of circulation or function at a distance from the actual seat of the disease. The symptoms produced by tumors situated in various portions of the brain are then discussed. By this arrangement repetition is inevitable and constant cross references between the chapter on the localizing symptoms and this chapter are necessary and it seems unfortunate that the two should not have been combined into one. The third question as to the pathological nature

of the tumor, is carefully considered and all the indications which can throw light on this very obscure field of diagnosis are given. The last chapter is devoted to the surgical treatment of intracranial tumors and is written by Mr. A. W. Hare. This is decidedly meagre, but nine pages being given up to it and many important details being entirely omitted. This is especially unfortunate, as it is the practical side of the subject that at present excites much interest.

The work then presents in an acceptable manner—exclusive of the last chapter—the important subject with which it deals, and is a valuable contribution to medical literature. The only criticism which may be offered is that the author has not embodied in it the results of other observers, notably Bernhardt and the German writers and therefore the work is less complete than might have been expected from his previous writings.

M. A. S.

INTUBATION OF THE LARYNX. By F. E. WAXHAM, M.D. 12mo. pp. 110. Illustrated. Chicago: Charles Truax, 1888.

THIS little volume is a detailed exposition of the very important procedure which Prof. Waxham has done so much to popularize. It is appropriately dedicated to Dr. O'Dwyer, whose name will be prominent in the history of medicine in connection with intubation of the larynx.

One hundred and fifty cases of intubation by the author for diphtheria are narrated with sufficient detail for due appreciation of their import; and a table of one hundred cases by Dr. O'Dwyer is appended. Of the 150 cases intubated by Waxham 41 recovered, and of the 100 by O'Dwyer 27 recovered; a striking similarity in result. It is pleasant to learn that the proportion of recoveries at a tender age far exceeds that which follows tracheotomy. Every detail necessary in studying and practising this important manipulatory procedure is duly presented in Prof. Waxham's manual, and is admirably illustrated. We are pleased to see that the author advises the precautionary use of an antiseptic respirator by the operator during his manœuvres.

By means of an artificial epiglottis attached to the tube the author has been able in some instances to overcome the difficulty in swallowing water and liquid nourishment which has been such an obstacle in the after-treatment. We would call especial attention to the advice of the author that great care should be taken to see that all the appliances used are carefully constructed, in order that unnecessary disappointments and accidents may not follow their use.

We earnestly recommend all physicians who intend to practise intubation to study this working manual of Prof. Waxham, as their best method of avoiding much unsatisfactory experience inseparable from practising a novel operation under such important conditions as those calling for intubation of the larynx. Intubation, while it is not expected to supersede tracheotomy in all instances, will save many a sufferer from an otherwise inevitable tracheotomy, and save from death many more in whose behalf tracheotomy is refused, or whose surroundings are such as to deny them the subsequent supervision necessary to secure all the ad-

vantages of that operation. If ovariectomy has added its thousands of years to the lives of dying women, shall not intubation add its tens of thousands to the lives of dying children?

J. S. C.

THE NATIONAL FORMULARY OF UNOFFICIAL PREPARATIONS. First Issue, by Authority of the American Pharmaceutical Association, 1888.

THE wisdom of having this work, somewhat similar in its scope to the *Pharmacopœia*, published without the official sanction of the medical profession may well be challenged.

On looking through the book the elixirs—eighty-five in number—are found to be quite conspicuous. One aim has obviously been to make the administration of drugs more attractive to the eye and palate of the patient; quite a praiseworthy object, but not the only, nor the chief one, to be kept in view in giving medicines.

No doubt, many practitioners are in the habit of prescribing this or that elixir or mixture made by various firms, and it is a hardship for the apothecary to be obliged to keep on his shelves essentially the same preparation made by several manufacturers, and the general use by physicians of such a volume as this would relieve the pharmacist from much of this burden.

The following examples, which are already much used (are taken from the *Formulary*), would make an excellent addition to our official list of drugs: Chloroform water; glycerite of tannic acid; camphorated chloral; Fehling's solution; pancreatine; solution of pancreatine; and solution of saccharin. To these might well have been added pills of quinine, as they were not provided for in the last *Pharmacopœia*.

Fleming's tincture of aconite, a stronger preparation than the official tincture of this very poisonous drug, is to be found in this list; every precaution should be taken not to confound these preparations with each other.

The composition of compound powder of pepsin is open to criticism from a physiological standpoint, as it is made up of *diastase*, *pepsin* and *pancreatine* with *hydrochloric* and *lactic acids* and sugar of milk.

The prescriptions for newer remedies have not been included, but it is intended to put them in a second edition of the work, should there be occasion for its publication. This list cannot replace the official one, and the addition of more than four hundred titles (the *Pharmacopœia* has about one thousand), would increase, in some ways, the embarrassment which the practitioner has to encounter.

The problem of how best to assist the physician in the intelligent use of medicines has been considered by a committee made up of representative physicians and pharmacists, and the outcome of their labors, the *United States Pharmacopœia*, is more or less familiar to the great body of practitioners. The last revision of the *Pharmacopœia* is by no means perfect, and the time for the next revision being near at hand, this *Formulary* will, doubtless, afford useful hints to the new committee, and, perhaps, promote some provision for the issue of a supplement after five years.

It is to be hoped that the revision of 1890 will give the country a work much superior to anything thus far published, and that it will not be thought necessary for the American Pharmaceutical Association to set up a "standard and guide," including "catarrh powder" and "diarrhoea mixtures."

The united efforts of both physicians and pharmacists should be directed toward making the best and simplest pharmacopœia, which shall be in universal use by American physicians.

F. H. W.

THE ANATOMY OF SURGERY. By JOHN M'LACHLAN, M.B., M.R.C.S., Master of Surgery, University of Edinburgh. Illustrated with 74 engravings. 12mo. pp. xv. 768. Edinburgh: E. & S. Livingstone, 1887.

THE fact of this book having been written for the special purpose of supplying aspirants for medical degrees in Great Britain with the material with which they are expected to be familiar in order to attain the highest of these degrees, at once bars much criticism which would be applicable to a similar treatise intended for the profession and students in general; but evidently the writer and his publishers, upon completion of the work, have thought it sufficiently valuable to place upon general sale. Very probably the contained history, etiology, classification, symptomatology, diagnosis, and treatment of the usual conventional surgical operations and procedures concord exactly with the ideas of the British Board of Examiners, so that any criticism would be of the ideas of that board and not of the book itself. Considering the book upon its literary merits and its value to the American student and practitioner, we find in it some points of advantage over other operative surgeries or surgical anatomies, and also many in which it falls short of being best amongst such works.

The author's prefatory statement that the book will not be found complete is verified by its perusal, but his excuse therefor and for errors, on the ground that the volume "has been very hurriedly put together," is far from being valid or sufficient. The usual idea and plan of similar works form the basis of the one in hand, and the customary chapters on ligations, amputations, etc., are in it to be found: but symptomatology, etiology, classification, and diagnosis receive better and more lengthy consideration than is usually allotted to them. Fractures and dislocations receive separate chapters; the anatomy of which is excellent, but, as might be expected, treatment at times differs widely from that in vogue in America. The illustrations are not sufficiently numerous, and some are exceedingly poor. The inclusion of a number of Smith and Walsham's beautiful plates of the collateral circulation of the main arteries is a valuable addition to the book's worth, as also is a table showing the origin, attachment, and nervous supply of every important muscle. Whilst we are bound to acknowledge many good points in this book's favor, yet are we equally bound to say that we would neither add it to our library, nor direct its use, above others, by a medical class.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS IN HARVARD UNIVERSITY.

PHENACETIN.

Of the many reports on the use of phenacetin, or acetphenetidin, one recently made by DR. FRIEDRICH MÜLLER (*Therapeutische Monatshefte*, August, 1888) is of unusual merit. He made numerous trials of the remedy in various diseases, and found that the temperature in adults was lowered by doses of from seven to eleven grains, and seldom as much as fifteen grains was used. The fall in the temperature occurred within from one to four hours, and was accompanied in most cases with perspiration, but without disagreeable sensations.

During the apyrexia, which lasted from three to five hours, the patients were quite comfortable, having a better appetite and more sleep. The rise in temperature was unaccompanied by a chill. For the patient's comfort it is desirable to avoid alternate fall and rise in the temperature. If the drug is administered continuously, the temperature rises in spite of it, and after some days the system becomes habituated to the agent, and larger and larger doses are required—in fact, so large as possibly to become dangerous. He has observed marked cyanosis from 90 to 120 grains daily.

Nothing more is accomplished by phenacetin than by the other antipyretics, for example, antipyrin; but it has the advantage of less unpleasant accompaniments. It is tasteless, vomiting and indigestion appear only exceptionally, ringing in the ears, or exanthematous eruptions, or signs of renal irritation were not observed. In some cases phenacetin seemed to promote diarrhœa.

Like some other antipyretic agents, phenacetin possesses the property of quieting pain, and has been employed to relieve headache, except that connected with organic cerebral disease, or uræmia. For this purpose forty-five, or even seventy-five, grains a day are required. In some neuralgic affections the pain is relieved by phenacetin, and for such purposes it seems to be in no wise inferior to antipyrin and antifebrin.

In twenty-four cases of acute articular rheumatism, prompt relief from fever and the pain and swelling in the parts was obtained in fifteen cases, and disappeared wholly in from two to nine days, in four cases no improvement followed, and in six the condition was not affected. Of these six, two were of gonorrhœal origin, and two were considered cases of chronic rheumatism.

Phenacetin, it would seem, deserves to be placed in the same rank with antipyrin and antifebrin as an antipyretic, and also as a means of relief in rheumatism and neuralgic pains. It is interesting to note that phenacetin possesses practically no antiseptic qualities.

COCAINE.

Any observations which will suggest the limits of safe doses for cocaine have a very practical interest. DR. SZUMANN, in the *Therapeutische Monatshefte*, suggests, for adults, one-half, or three-fourths, to one grain, subcutaneously. With such doses he saw no untoward effects; one grain, however, is adapted only to robust individuals. Some patients will, of course, bear very large doses, among them certain opium-takers, who have used as much as seven to thirty-seven grains daily, though one may get toxic symptoms in such patients from an injection of one and a quarter grains.

With nervous patients, and also with those having cardiac disease, as well as those inclined to cerebral congestion, large doses of cocaine may prove dangerous on account of the marked effect on the heart and circulation, as Alexander Fränkel has very properly emphasized.

COCAINE IN GENERAL ANÆSTHESIA.

This method varies from that mentioned in the September number of this JOURNAL (page 288), in that the cocaine is injected for its local anæsthetic effect at the seat of operation, after the general anæsthesia has been induced. Though both substances are administered for the same end, their combined use, according to PROF. OBLINSKI, excludes certain dangers of the separate employment of each. In cocaine we possess an excitant which is the best possible antidote to the action of chloroform in paralyzing heart and vessels. So the use of chloroform is a good measure against the symptoms of brain anæmia that cocaine often produces. The amount of chloroform used is less—vomiting occurs less often, and especially noteworthy is the gentle recovery.—*Wien. med. Wochenschrift*, 1888, Nos. 15 and 16.

ON THE ADMINISTRATION OF SULPHONAL.

In the *Therap. Monatshefte* of July 2, 1888, KAST, the discoverer of sulphonal, gives some experimental conclusions directed to the point of the retarded activity of sulphonal. From published papers (Cf. Lovegrove, *Brit. Med. Journal*, 1888, p. 1112) and private communications he has learned that many have found that the primary hypnotic action is postponed too long—i. e., two or three hours or more, and that the effect lasts longer than is wished—i. e., into the succeeding day.

Two important qualities distinguish sulphonal, he observes: First, its in-

solubility; second, its resistance to chemical change. Sulphonal is soluble, he finds, by exact estimation in eighteen or twenty parts of boiling water, but it recrystallizes on cooling. At blood-heat, 450 parts of water are necessary to dissolve one part of sulphonal. Addition of salts considerably increases its solubility—thus it is easily soluble in concentrated mineral water. The addition of an amount of hydrochloric acid, corresponding to the proportion in the gastric juice, increases its solubility one-half. In artificial gastric juice it is soluble 1:200, at the temperature of the body, and it was not reprecipitated for several hours after neutralizing. Peptones prevented the reprecipitation of a very concentrated solution made in hot water.

As to the absorption, Kast found that very small quantities of sulphonal were present in the intestine of a dog killed two hours after the ingestion. After six hours none could be demonstrated in the gastro-intestinal tract, but small quantities were found present in the blood.

These facts lead to the determination of the best method of administration. This should be in a good quantity of warm water in the early evening hours, and best with the supper. In this way advantage is taken of those conditions favoring a rapid solution, viz., a fairly large quantity of water with a good proportion of hydrochloric acid, and salts and peptones in rich abundance.

METHOD OF TESTING A HYPNOTIC.

As many physicians will undoubtedly be led to experiment with some of the numerous new hypnotics, a mention of Rosenbach's cautions will certainly be profitable. Recognizing the importance of the mental attitude of the patient as a factor, he advises, first that the hypnotic be given without the knowledge of the patient at times other than bedtime; second, if the results appear good, that the patient be made acquainted with the experiment, and then an indifferent substance be substituted, to be alternated now and then with the hypnotic; and finally, it is to be given to patients, without their knowledge, who are not in bed.—*Berl. klin. Wochenschrift*, 1888, No. 24.

THE ABSORPTION OF COD-LIVER OIL—LIPANIN.

Physiologists have always been at work upon the question, What makes cod-liver oil more digestible and assimilable than other oils and fats? The explanation was in turn found in the iodine present, in its property of passing through animal membranes more easily, and, finally, it was asserted that it was no different from any other fat. Each of these views was in turn disproven and gave place to that which has prevailed for a decade, since it was first set forth by Buchheim. This finds the key in the larger proportion of free fatty acids present, which assist in the emulsification of the fat after the oil has reached the duodenum. In general, though, the proportion of free acid in ol. morrhue is very variable, and for this reason and because of the disagreeableness of the oil, MERING (*Therap. Monatshefte*, 1888, p. 49) had made a substitute which has been put into the market under the name of lipanin (λιπαίνω, to fatten). This consists of olive oil containing six per cent. oleic acid, of pleasant taste and emulsifying very easily. Mering has used it now in forty cases of rickets, phthisis, etc., and in all the effects on nutrition

was positive, the weight increasing. No symptoms were noted on the side of the digestive tract. The dose is the same as for cod-liver oil.

Recently MARPMANN, an apothecary in München, has taken up the subject again and thrown new light upon it (*Münch. med. Wochenschrift*, July 7, 1888).

The digestion of fat is a subject about which we possess but little accurate knowledge, but it seems improbable that the small quantity of fatty acid present in cod-liver oil can be of so much importance when we consider that *neutral* fats in food are perfectly well borne and assimilated, and that the pancreatic juice has the power to split up a neutral fat into fatty acid and glycerin. Marpmann, then, was not satisfied with the fatty acid theory, and looking for another source finds it in the stomach, to which, before him, no attention had been directed. Fat is better borne the more intimately it is mixed with the food and saliva—*i. e.*, the better it is prepared to pass the stomach; oil in any considerable quantity upsets the stomach, because it envelops the food and prevents gastric digestion, and when one fat is found better borne than another, the ground is to be sought in the way such a fat behaves *in the stomach*.

Impelled by such considerations as these, Marpmann tested various oils with artificial gastric juice. All the oils shaken with the gastric juice separated immediately on standing, but cod-liver oil remained emulsified for fifteen minutes, and after twenty-four hours had cleared up only one-half. Here, then, according to Marpmann, is the explanation of the superiority of cod-liver oil, *viz.*, that it passes out of the stomach and meets the pancreatic juice *after it is already in a finely divided state*, while other oils, keeping their independent existence in the stomach, enter the intestine in the form of large drops.

By the same experiment lipanin refuses to mix with the gastric juice, but separates its oil quite pure after a few minutes; a mixture of olive oil and phosphoric acid separates just as pure olive oil. These facts prove that the miscibility of cod-liver oil with the gastric juice cannot depend upon its containing free acid. On the other hand, first, fat-peptonate, another substitute for cod-liver oil, consisting of cod-liver oil and olive oil mixed with pancreatic juice, and, second, a mixture of olive oil and oleate of soda, mix, the first completely, no oil separating in twenty-four hours, and the second about as cod-liver oil.

These facts allow us, Marpmann believes, to suppose that the active ingredient in cod-liver oil is a small quantity of some salt of a fatty acid. Later he has obtained from cod-liver oil, by ether and alcohol, a substance which, dissolved in water, gives other fats the properties of cod-liver oil, and which is likewise present in the pancreatic fluid.

One practical conclusion which Marpmann draws is that cod-liver oil should be mixed with the food and prepared in the mouth, rather than drunken.

BORIC ACID IN ANTISEPSIS.

In the *Journ. de méd. de Paris*, 1887, vol. ii. p. 180, some notice was given a substance called antifungine, which was shown to be borate of magnesia, soluble in four parts of boiling water, and possessing in fifteen per cent. solution very energetic antiseptic and disinfecting properties. In the same journal of July 15, 1888, directions are given for making a substance like this, and

possessing its same qualities. Dissolve one part of calcined magnesia in seventy-five parts of water on a water bath, and add boric acid to the point of making the solution cloudy. This will require 12.4 parts of boric acid. After evaporation, the ground residue makes a white powder of sweet taste, soluble in four parts of water, and the solution is strongly antiseptic. This substance removes the disadvantage of boric acid in point of insolubility.

ANTISEPTIC PROPERTIES OF AMMONIA.

GOTTBRECHT (*Deut. med. Woch.*, July 19, 1888) calls attention anew to the antiseptic properties of ammonia. These were long ago discovered by Richardson, though but little has been thought of the fact. Gottbrecht finds that a solution containing liquor ammoniæ in proportion of 1:100, keeps meat from decaying seven days, and in proportion of 2:100, and 4:100, two and a half months; while meat kept over a year in 5 to 8 per cent. solutions. Cultures of this last gave negative results. Like Richardson, so Gottbrecht finds the source of this control in the strong reducing power of ammonia.

SACCHARIN AS AN ANTISEPTIC.

M. CONSTANTINE PAUL finds that saccharin possesses marked antiseptic powers. A 1:700 solution controls the development of the staphylococcus pyogenes aureus, and because it prevents the development of all microbes contained in the saliva, etc., and a 1:200 solution prevents ammoniacal change in the urine, he recommends its use in solutions for lavage of the stomach and bladder.

A 1:500 solution hinders in an appreciable manner the action of pepsin on the white of egg, fibrin, etc., and of diastase on starch, but does not arrest either action entirely. This may perhaps account for the digestive disturbances referred to by M. Worms (*vide* September number, p. 287), because it cannot be said to be in any way toxic, being eliminated entirely unchanged by the urine. Another explanation might be found in the condition of the kidneys. Saccharin has been made the subject of much discussion in France, and Girard, director of the municipal laboratory of Paris, demanded that its sale be stopped because of its extensive and growing use in adulteration of syrups, liquors, and food. Under the name of sucre de Cologne it has been sold at a low rate (four cents a German pound), and there is, besides, no duty on it.—*Comptes rend. de l'acad. de méd.*, July 13, 1888, and *Gaz. Hebdom.*, August 3, 1888.

IODOFORM IN HÆMOPTYSIS.

CHAUVIN and JORISSENNE (*Prag. Med.*, May 19, 1888, p. 357) have found the best comparative results in the treatment of hæmoptysis from the use of iodoform, gr. j, in pill, twice a day. Their observations rest on a large series of cases, and, therefore, are worthy of attention.

DIURETIC ACTION OF STROPHANTHUS.

LEMOINE finds polyuria the most constant of the effects of strophanthus. Experiments on healthy persons with grt. 5-6 of tincture gave double the

quantity of urine in forty-eight hours. The same success was obtained in cardiac cases; as a rule, the persistence of the diuresis was marked. A secretion of § xliij was increased to three quarts, and five days after suspending its use was still two quarts. In three cases a very abundant serous diarrhœa was caused, only to be controlled by stopping the drug.—*Comptes rend. de Soc. d. Biol.*, June 15, 1888.

SIMULO AS AN ANTIEPILEPTIC AND ANTIHYSTERIC.

EULENBURG (*Therapeutische Monatshefte*, 1888, 353) has made trial of the tincture of simulo, prepared from the fruit of *Capparis coriacea* recently recommended for the treatment of epilepsy by W. Hale White in the *Lancet* of March 31st. He administered it during a long period of time to four cases of epilepsy and three of grave hysteria. The dose employed was one-half to two teaspoonfuls two or three times a day. In the hysterical cases it proved absolutely useless, even as a palliative. The bromides, properly administered, have proved themselves the best means we possess in the treatment of epilepsy. There are cases, however, in which, through some idiosyncrasy, they produce maniacal excitement, convulsions, or delirium; though these are rare; others in which their action is too depressant to allow of their continuance, and still others in which they exert only a partial control over the frequency and intensity of the paroxysms. It was to be hoped that simulo might prove of value as a substitute in such cases, but in only one of the four in which trial of it was made, were the results sufficiently encouraging to warrant further experiment with it. This case was that of a man of eighteen years, who for seven years had suffered from frequent well-marked attacks of epilepsy, and in whom improvement up to a certain extent had followed the use of the bromides. During five months he was given the bromides for one to two weeks, and then the tincture of simulo for an equal time. It was always the case at first that the attacks were less frequent, and the patient felt better during the time that the simulo was being administered; but finally the drug seemed to lose its power and had to be suspended, since the paroxysms grew more frequent. In the other three cases of epilepsy the action of the new drug was evidently weaker and more uncertain than that of the bromides in moderate doses.

CODEINE AND MORPHINE IN DIABETES.

DR. MITCHELL BRUCE has compared the effects of these alkaloids in two classical cases of diabetes. The observations extended over several months, and were made with great care. The sugar in the urine was first reduced to a minimum by a strictly antidiabetic diet, and then one of the drugs was administered to both patients, and its effects on the sugar were noted. Phosphate of codeine was given hypodermatically, and the dose was gradually increased to more than twenty grains a day. After an interval on strict diet, acetate of morphine was given to both patients, up to as high as five or six grains per diem. Of the two drugs, the morphine proved to be the more efficacious, as under it the sugar was more completely controlled. Codeine is much more expensive than morphine, and large doses of it are necessary. Narcotic effects from morphine seldom presented themselves so long as the sugar continued to fall.

Dr. Bruce found some difficulty in removing the last traces of sugar, and he suggested that in practice we should be satisfied with reducing the sugar to a small amount, rather than use the large doses required to free the urine from it completely.

The full report of this carefully conducted inquiry may be found in *The Practitioner* for July.

GLYCERITE OF STARCH AS A SURGICAL DRESSING.

CHARLES E. FLEMING, M.R.C.S. (*British Medical Journal*, September 22d), has found a non-irritating dressing which does not evaporate at ordinary temperatures, does not allow the discharges to get caked or hard, while it is freely miscible with them. It may have some antiseptic dissolved in it. The starch added to the glycerine makes it more convenient to apply, and, in addition, forms a non-irritating surface to apply to the wound, and is a mechanical protection.

It is most conveniently used, thickly spread on one or more layers of Gamgee tissue, or some absorbent wool; it may be removed with the greatest ease from any wounded surface. The glycerine itself is hygroscopic, does not usurp the place of the discharge, nor prevent the free escape of watery vapors. Such a dressing, after several days, will be found moist, soft, flexible, and heavy with the quantity of fluid it contains. Next the wound there is a jelly-like layer, which may be removed readily, and the sutures, if any, are distinctly seen and easily taken out. Its use in skin-grafting is suggested.

MENTHOL IN PRURITUS LABII.

The application is made by rubbing the affected surface two or three times with solid menthol; it produces some burning pain at first, but is followed by a most comfortable sense of coolness, and the congested color of the vulva almost disappears.—*British Medical Journal*, September 1, 1888.

CREOLIN.

AMON, as well as other writers in the surgical field, has used creolin with satisfactory success in obstetrics and skin diseases; he also obtained good results in tuberculosis.

In pulmonary tuberculosis, and other allied diseases, accompanied with more or less secretion, he used creolin inhalations, and found that they were inhaled easily and without harm. He began with one-half per cent. solutions and increased them to two per cent. The inhalations had a favorable effect upon the expectoration, and in almost every case the amount of the secretion decreased perceptibly, and after some days the patients felt relieved. No effect upon the course of the fever was observed. In cases in which there were bad smelling excretions, they either became odorless, or the offensive odor was much mitigated.

In the last stage of tuberculosis Amon saw no beneficial effect from creolin. In two cases, in which infiltration of the apices, or only slight extension of the process over an upper lobe existed, a marked and favorable local result was perceived (diminution of the riles and less dulness). He has used it successfully in diphtheria.—*Schmidt's Jahrbücher*, vol. cccix.

LARGE DOSES OF DIGITALIS IN PNEUMONIA.

PROF. PETRESCO gives a most astonishing account of the results of this remedy in pneumonia. He used an infusion made from one to two drachms of digitalis leaves, in some cases even three drachms in the twenty-four hours, with, he claims, complete success.

Since 1883 he has employed in pneumonia nothing except an infusion of one drachm of digitalis leaves in eight ounces of fluid, a tablespoonful every half hour. As a rule, the malady was strangled in three days. "The fever and all the physical signs, local as well as general, disappeared as if by enchantment."

The temperature fell, after about three doses of a drachm of the leaves, from 104°-105° to about 96°; the pulse from 120-130 down to 30-36, a minute.

The general condition of the patients improves in a most surprising manner; they wake up as if from a sound sleep, express themselves as feeling very well, and ask for something to eat.

The mortality in these cases was only 1.22 per 100. He even goes so far as to say that he is convinced that the mortality in this disease may be reduced to zero if these doses are given early.

As illustrating the tolerance and harmlessness of these doses of digitalis he refers to 577 observations published in his treatise on *Therapeutics*, in 1884, and to the theses of his students.—*Gazette Hebdomadaire*, Aug. 24, 1888.

MEDICINE.

UNDER THE CHARGE OF

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ON VERATRUM VIRIDE IN DIPHThERIA.

In 1881, J. M. BOYD (*Medical Record*, 1888, 33, 627) was induced to give a child of four months, suffering from malignant diphtheria, full doses of Norwood's tincture: viz., a drop every two hours. After four or five doses the pulse fell from 180 to 80, and coincidentally with this the abundant deposit melted away with great rapidity, and in twenty-four hours the occlusion of the nose and larynx had so far disappeared that the child was again able to nurse. Since this time the author has seen upward of seventy cases of the disease, and in no instance has the timely use of veratrum disappointed him. The medicine should be given early and in full doses, and made the essential feature of the treatment; the slowing of the pulse being the *sine qua non*.

The pulse of diphtheria is characteristic; being tense, wiry, and rapid. The viciousness of the attack may be better measured by the tension and speed of the pulse than by any other feature. If the heart is slowed by the veratrum, the rapidity of the circulation is lessened and the inflammatory processes about the seat of lesion are mitigated. Under the positive influence of the drug, the system appears to have a tolerance for the diphtheritic poison, and there is shown a resistance to the further progress of sepsis and to the spread of the membrane. The author does not fear asthenia from the use of veratrum, but dreads rather exhaustion from persistently rapid heart-action. Rest the tired heart, and the economy will take on recuperation and resistance to the poison, and the best protection against asthenia will be found. The dose for an adult is three drops every two hours, adding one drop each dose until the pulse is reduced to 60 or 70 per minute. If vomiting is a troublesome symptom, the dose must be increased cautiously or omitted occasionally.

ANTIPYRINE AS A SPECIFIC AGAINST WHOOPING-COUGH.

SONNENBERGER (*Therap. Monatsheft.*, August, 1888), writing again on this subject, considers antipyrine a specific in this disease. He gives it in somewhat smaller doses than those used for fever, administering about as many centigrammes as the child is months, and as many decigrammes as it is years old. With older children a proportionately smaller dose will prove efficient.

The drug is best given three times daily with, perhaps, an additional dose at night. In these small doses it can be given continuously for weeks without injurious results, a very important matter, since it is on this continuous administration of antipyrine that rapid recovery depends. In general, the earlier in the disease the drug is employed the better is the result. If the opportunity presents itself to use the drug before the characteristic attacks have been fully developed, we may often cut the disease short, or at least change it into the appearance of a mild bronchial catarrh. If the treatment be commenced in a somewhat later stage, the symptoms may be very greatly reduced in severity, and but six or seven mild paroxysms will occur in the twenty-four hours. In still later stages, when the disease is at its height, the action of the drug is by no means so remarkable, but the good influence is still seen after some days. The attacks become milder and less frequent, and expectoration more abundant; and the disease rapidly goes into the *studium decrementi*.

Antefebrein acts far less favorably than antipyrine in controlling whooping-cough.

CATALYTIC ACTION OF ELECTRICITY IN RHEUMATIC AFFECTIONS.

G. L. WALTON (*Boston Medical and Surgical Journal*, 1888, cxix. 101) quotes several writers in evidence of the catalytic action of electricity. It appears that it is especially useful in rheumatic affections of muscles and joints of a subacute type, and that by the use of galvanism exudation and pain may be made to disappear. The author reports two cases treated successfully in this way. The first was one of rheumatism of the wrist and hand, which had lasted two months and had rendered flexion of the fingers impos-

sible. Motion and massage were painful, and there was some atrophy of the muscles of the hand and forearm. Electricity was employed for twenty minutes daily; the galvanic current being passed through the wrist and fingers, and galvanism and faradism being applied to the muscles. Improvement began at once, and by the end of a week pain had nearly disappeared and motion was returning; and at the end of five weeks treatment was discontinued as recovery was nearly perfect. The second case was one of rheumatic swelling of the ankles which had lasted some months and gave considerable annoyance, though unaccompanied by pain or redness. In this instance faradism was used every other day. The swelling could be seen to lessen during the application, the return of it between the applications became less marked, and in two and a half months the ankles were virtually normal. Walton has treated several cases of muscular rheumatism with excellent results, particularly when the muscles of the neck and back were affected. Several instances of swelling of the ankles, not of a rheumatic nature, and cases of pain in the heels and soles caused by overuse were surprisingly benefited by electricity. In this class of cases the faradic current seems to answer as well as the galvanic.

ACUTE FEBRILE ICTERUS (WEIL'S DISEASE).

Since the publication of Weil on this subject, there have appeared articles by Goldschmidt, Wagner, Roth, Haas, Fiedler, and Hueber. Aufrecht has also reported two cases, but it is questionable whether they are correctly included under this heading. NAUWERK (*München. med. Wochenschr.*, 1888, 579) now publishes two new cases of the affection. In the first, an insane woman of thirty-five years, the disease began suddenly with fever, and on the second day intense icterus appeared over the whole body, and enlargement of the spleen was evident. There rapidly developed salivation, fall of temperature, profuse sweating, coma, and death on the third day of the disease. There was no vomiting or diarrhoea. At the autopsy there was found a necrosing inflammation of the small intestine, producing small scattered ulcers reaching to the muscular layer. The liver and kidneys exhibited extreme albuminoid, fatty, and necrotic degeneration of the parenchyma, with scattered foci of inflammatory cellular infiltration. The absence of bacilli and the extent of the degeneration indicated the presence of some toxic cause (ptomaine).

The second case occurred in the person of a butcher, who was suddenly taken sick with a chill, followed at once by the evidences of being extremely ill. There were profuse sweats, increased frequency of the pulse, and high temperature. By the third day icterus developed, and there was frequent vomiting with meteorism, mental oppression, and delirium. By the sixth day diarrhoea appeared; by the seventh, there was transitory diminution of the fever and rapidity of the pulse, and the liver became enlarged. Later the spleen was enlarged; on the sixteenth day a roseolous eruption was visible; and on the eighteenth day death occurred from cardiac weakness and oedema of the lungs. The autopsy revealed almost the same changes in the liver and kidneys as were seen in the first case. There was, however, an entire absence of any lesion of the gastro-intestinal tract.

ENDEMIC CEREBRO-SPINAL MENINGITIS.

Cerebro-spinal meningitis, says TOWNSEND (*Boston Med. and Surg. Journ.*, 1888, cxix. 52), first appeared in this country in 1806. Since then there have been numerous epidemics in different parts of the country, and, besides this, it is rapidly becoming endemic in many of the cities, especially in New York, Philadelphia, Chicago, and Jersey City. Since the great epidemic of 1872 the disease has not been absent from New York. It is evidently an infectious disease, and is as clearly not contagious, in the ordinary sense of the word. Numerous investigators admit the presence of a micrococcus in the purulent fluid of the meninges; and some have claimed that this is identical with that found in pneumonia. There seems, indeed, to be some relation between pneumonia and cerebro-spinal meningitis, when viewed from a clinical standpoint alone, since they not uncommonly occur together in the same patient. If one and the same microorganism were always the cause of both affections, there should exist a tolerably constant relation between the number of cases of the two diseases. The author shows by tables and graphic charts that no such relation exists, as applies to Boston at least; and he concludes that either the ordinary croupous pneumonia has a different origin from the pneumonia which is produced by the same organism as is cerebro-spinal meningitis, or certain uncomplicated cases of the latter affection are caused by a different organism from the one which is thought to produce both diseases. Clinical as well as bacteriological studies show that cerebro-spinal meningitis is related in some way to acute rheumatism on the one hand, and to ulcerative endocarditis on the other.

We may have, first, the fulminant form of the affection, in which death takes place in twenty-four hours or less; second, the abortive form, characterized by headache, stiffness of the neck, and, perhaps, a few herpes vesicles, with recovery in a few days; third, the intermittent form, in which there are intermissions at irregular intervals, when the temperature is normal, and almost all the other symptoms may nearly entirely disappear; and, fourth, the typhoid form. As regards differential diagnosis, the fulminant form is usually readily recognized, but where very rapidly fatal, may be confounded with cerebral hemorrhage. The absence of much elevation of temperature aids in distinguishing the latter affection. Tubercular meningitis is indicated by a family history, a gradual onset, the evidence of tubercles deposited elsewhere, and the absence of herpes. Retraction of the head may occur in basilar tubercular meningitis, but is rarely marked. If tubercles invade the spine, the symptoms of cerebro-spinal meningitis are exactly reproduced. In simple meningitis there is a history of traumatism or of middle-ear disease. Traumatism is said, however, to have produced the other affection.

The onset of scarlet fever may be marked by severe cerebral symptoms, but the diagnosis will not long remain in doubt. When it terminates fatally within twenty-four hours without the appearance of a rash, the diagnosis from cerebro-spinal meningitis may be impossible. The frequent absence in children of the cardinal symptoms of pneumonia may render the diagnosis obscure. Holt says that a slow, irregular, intermittent pulse may be found in meningitis, but not in pneumonia. A persistent high temperature, with but little variation, is characteristic of pneumonia, but not of meningitis. If

in pneumonia there develop persistent retraction of the head, arching of the fontanelle, severe headache, retardation of the respiration, and frequent convulsions and coma, the contemporaneous existence of cerebro-spinal meningitis is probable. Typhus fever develops more slowly, and a copious macular eruption appears on the fourth to fifth day. A temporary pain and stiffness of the neck muscles may be caused by rheumatism; but there is no headache, and recovery takes place in a few days. The prognosis of cerebro-spinal meningitis varies extremely. Twenty to seventy-five per cent. die, but very severe cases may recover. The treatment consists in opium in large doses to relieve the extreme pain, bromides, cold applications to the head and spine, a sustaining diet, and stimulants as indicated. The author closes his paper with the reports of two cases coming under his observation.

ON AN AFFECTION CHARACTERIZED BY ASTASIA AND ABASIA.

Under this title BLOCQ (*Arch. f. Neurolog.*, 1888, xv. 24) describes a condition which has been spoken of by other writers under various names, indicating the inability, on the part of the patient, to stand or walk, although the sensibility, motor power, and the coördination of other movements of the lower extremities remain intact. From his own observations and those of others, he concludes that the disease usually begins rather suddenly with or without painful sensations, and generally after slight trauma or violent psychical disturbance. The characteristic symptoms vary in intensity, and in the lightest cases consist simply of an uncertainty in standing and walking. The effect of closing the eyes is inconstant; the tendon reflexes are normal. Locomotor movements of other sorts, as jumping, walking on one leg or on all fours, climbing, etc., are unaffected, and all movements are possible when the patient is in the recumbent position. There are often other nervous affections chiefly of an hysterical nature. The course of the disease is capricious, though recovery, often sudden, is the rule. The diagnosis is not easy, since the disease is to be distinguished from tabes, Friedreich's ataxia, hysterical ataxia and paraplegia, chorea, etc. As regards etiology, difficult parturition and typhoid fever have been noted as causes, in addition to those mentioned. Often no cause can be found. The same therapeutic means must be employed as in hysteria.

RAPIDLY FATAL CHOREA.

COOK and BEALE (*Brit. Med. Journ.*, 1888, i. 795) report a fatal case occurring in a girl of nine years, in whom the choreic movements constantly became worse; delirium developed with slight fever, rapid and feeble pulse and rapid and interrupted respiration; and death suddenly occurred one hundred and thirty hours after the onset of the disease. The autopsy revealed extreme anæmia of the pons and medulla, but no other changes of note in other parts of the body.

A CLINICAL CONSIDERATION OF SIXTY CASES OF CEREBRAL PARALYSIS IN CHILDREN.

In the last four years at the Out-patient Department of the Children's Hospital, Boston, ROBERT W. LOVERT (*Boston Medical and Surgical Journal*,

1888, 118, 641) has observed some sixty cases of motor disturbance in which there seemed reason to believe that the disability was of cerebral origin. They could be divided naturally into three groups: 1. Hemiplegia. 2. Spastic paralysis of both legs. 3. A class of nondescript cases, perhaps best called incoördination or idiocy. Of the first group there were twenty-six cases, ranging from one and a half to fourteen years of age. Two-thirds of these were cases of the adult type, while in the others there was more or less spastic paralysis of both legs as well. There was, in every case, at the time of observation a certain amount of impairment of motion of the diseased side. Muscular atrophy was, as a rule, slight compared with that seen in infantile spinal paralysis of the same duration. A considerable degree of bone shortening was seen in cases which had lasted some time. Facial paralysis had been present in at least half the cases, and strabismus was still observed in more than half. Mental impairment was common; only six of the twenty-six cases being of average intelligence. Seven cases were aphasic. Though abnormal parturition is so often the cause of cerebral injury in the child, yet in the cases of hemiplegia and spastic paralysis there existed no such universal factor, over half of them being born by normal labor which the mothers described as easy. All but two of the cases of hemiplegia were noted within the first two years of life. An illness of some sort, as severe crying, bowel irritation, indigestion, or convulsions, marked the onset of the disease in nearly all the patients. Spastic paralysis, in which the legs, and sometimes the arms, are straight and rigid, the gait is on the toes, the legs are often crossed, the reflexes are increased, and there is not much wasting of the muscles—occurred in sixteen cases, not including those in which it complicated hemiplegia. In most of them the disease was noticed immediately after birth. The mental impairment was even more general than in hemiplegia. In more than half there was strabismus; seven were completely aphasic; and twelve were unable to walk at all. In seven cases the hands were also affected.

The question whether spastic paralysis in children is spinal or cerebral in origin has been much discussed. The author lays stress on the fact that in all his cases there was not one which was free from cerebral symptoms. He quotes several writers to show that the cerebral origin is now the generally accepted cause. He has examined the records of seventy-seven autopsies of cases of hemiplegia and of spastic paralysis, and found uniformly a lesion of the motor tract, atrophy and retarded development of the brain, and descending degeneration of the pyramidal tracts and lateral columns of the cord. It seems unquestionable that the disease sometimes originates in defective development of the nervous centres, especially the pyramidal tracts. Since hemiplegia and spastic paralysis differ but little in the original lesion, it is not strange that they should be sometimes associated. It would seem that the first affection may gradually pass into the second.

The diagnosis of cerebral from infantile spinal paralysis can usually be made without difficulty, except at the beginning, when it is practically impossible. Cerebral paralysis is chiefly distinguished by being oftentimes hemiplegic, while the tendon reflexes are increased, wasting comes on but slowly, and the reaction of degeneration does not exist. The prognosis of hemiplegia is grave; the chances being that mental enfeeblement will develop

and possibly spastic paralysis. In pure spastic paralysis it is probable that the child will be able to walk somewhat, if the case is not severe, and eventually to talk more or less badly. The treatment of these affections consists in mental training, and in keeping the muscles in as good a condition as possible by the use of the faradic current and massage.

The third group of cases resembles superficially those which have been already described, but both definite paralysis and spastic rigidity of the muscles are absent, and idiocy obscures everything. Either the children were too limp to stand at all, or they stood with the feet far apart, and walked with a staggering gait and with frequent falls. The reflexes were sometimes normal, sometimes increased. Disturbances of sensation were common. Nine out of thirteen cases, which the author saw, were congenital, but it was hard to find any assignable cause for them. None of the cases showed any tendency to improvement during the time they were under observation. In none of the cases was the birth abnormal or difficult, and the author emphasizes the fact that in no class of cases of infantile cerebral paralysis does difficult labor have the influence which has been attributed to it.

THE CEREBRAL PALSIES OF CHILDREN.

OSLER (*Medical News*, July 14, 21, and 28, August 4 and 11, 1888) has reviewed the clinical material at the Philadelphia Infirmary for Nervous Diseases and at the Pennsylvania Institution for Feeble-minded Children at Elwyn. Three divisions are made: hemiplegia, 120 cases; bilateral hemiplegia, 19 cases; and paraplegia, 11 cases.

Hemiplegia is a common affection in children, according to some writers occurring as frequently as spinal paralysis, but at the Philadelphia Infirmary for Nervous Diseases the proportion is not quite 1 in 4. Of the 120 cases, 5 were boys and 63 girls. There was right hemiplegia in 68 and left in 52 cases. Of 110 cases at which the age at onset was noted, 15 were congenital, and in 81 the disease came on within the first three years of life. In 9 cases the children were delivered with forceps; 3 were due to trauma; 16 followed the infectious diseases. In the majority of cases the disease begins with convulsions and the hemiplegia is noticed when the child recovers consciousness. Incomplete recovery is the rule, but the patients are liable to the serious sequences of epilepsy and mental disorders. 31 cases presented post-hemiplegic movements. The result of an analysis of 90 autopsies is given. In 16 instances there were vascular lesions, as plugging of a Sylvian artery in 7, and hemorrhage in 9. The age at the outset in this group was high; as, excluding 3 congenital cases, there was only 1 under three years. Atrophy and sclerosis were met with in 50 cases. 2 instances are recorded of sclerosis from the Elwyn Institution. Porencephalus was present in 24 cases.

Bilateral spastic hemiplegia is characterized by a spastic condition dating from or shortly succeeding birth. There is no wasting; the reflexes are increased, the mental condition profoundly disturbed and ataxic, and athetoid movements of the most exaggerated kind may occur. 19 cases are described; 2 of bilateral athetosis. In 16 reported autopsies the condition has been either cortical sclerosis or porencephalus.

Spastic paraplegia in children is closely related to bilateral hemiplegia, but

the arms are not affected. It dates from birth or comes on within the first years of life. The legs are stiff, the heels raised, and there is strong adductor spasm. The patient walks on the toes or there is cross-legged progression. The intellect is not so profoundly impaired as in bilateral hemiplegia. 11 cases are described. The morbid anatomy of this affection is not yet clear. Only one autopsy by Förster is reported (from the Dresden Children's Hospital). Cerebral lesion with descending degeneration was present. The reasons are given for believing it to be of cerebral origin, as Heine suggested many years ago, when he named the disease paraplegia cerebri spastica.

In the discussion on the pathology of the cerebral palsies, apoplexia neonatorum is held to play an important part in the production of the bilateral hemiplegia and paraplegia. In hemiplegia there is still much doubt as to the nature of the initial lesion. Strümpell's poli-encephalitis has not yet been demonstrated anatomically, though the view is very plausible, and subsequent autopsies may show the truth of it. The relation of the cases to the infectious diseases may be due to embolic processes associated with endocarditis, to arteritis or periarteritis such as has been described in the heart in typhoid fever, or to changes in the cerebral gray matter similar to those which have been described in the cord in measles by Barlow. The conclusion is reached that infantile hemiplegia is the result of a variety of different processes, of which the most important are: (1) Hemorrhage, occurring during violent convulsions or during paroxysms of whooping-cough. (2) Post-febrile processes: (a) embolic, (b) endo- and periarterial changes, (c) encephalitis. (3) Thrombosis of the cerebral veins. Under the section on treatment the question of operative interference is discussed and two cases are noted in which trephining was performed for Jacksonian epilepsy following infantile hemiplegia. These are held not to be suitable cases for operation.

TETANY.

J. HOFFMANN (*Deutsch. Arch.*, 1888, xliii. 53) publishes a valuable paper, based on eleven cases of tetany, reported in full, and accompanied by numerous references to cases of other observers and their opinions concerning the disease. In all but one of the author's patients the affection began between the ages of sixteen and twenty-five years. He is disposed to believe that the nature of the occupation is not without influence on its etiology, and that shoemakers, seamstresses, clerks, etc., are, perhaps, especially liable to it. After reviewing at some length the literature relating to the bearing of the thyroid gland on tetany, he concludes that, in all probability, the removal of this organ is one of the etiological factors. He does not agree with Strümpell that there are endemic influences in its production. The spasm was rather widely spread in the cases which he reports, and was always bilateral. The attacks lasted from several minutes to some hours, and in one instance ten days. The premonitory fibrillar muscular trembling was absent in most cases; the tendon reflexes were usually normal, but in one case diminished, and in another nearly absent. The attacks of spasm were always preceded or accompanied by paresthesias. Trousseau's symptom (the production of an attack by compression of the main artery of a limb) was always present during the height of the disease, while the compression of a nerve had this effect in but

one case. The disappearance of this symptom is in no sense a sign that the disease has terminated, but only that it is in abeyance. The galvanic and faradic electrical excitability of the nerves was much increased in all cases in which it was carefully examined; and even the facial and the hypoglossal nerves may share this excitability. An increase of the mechanical excitability of the motor nerves was absent in but one instance. A series of experiments convinced the author that the mechanical and electrical excitability of the sensory nerves is increased. The disease lasted in the author's cases from half a year to twenty-one years. Most commonly the attacks occur in groups, lasting some weeks, and with variable periods between them, in which there exist only certain symptoms of latency; or the intervals may continue for years, with absolutely no sign of the affection.

According to most authorities, the prognosis is favorable, though the disease may last for years. Death occurs only exceptionally, from exhaustion or spasm of the diaphragm. Certain of the author's cases exhibited evidences of paralysis, for which the tetany was apparently responsible. Frequent shedding of the finger-nails and a brown pigmentation of the skin of the hands and face was observed in one instance, and the author considers the probable cause of the latter to be nervous influence combined with repeated small extravasations of blood into the skin, induced by the muscular spasm. Hoffmann reports the results of autopsies which have been made, and quotes extensively the opinions of various writers concerning the pathological anatomy of tetany; all of which indicates that, though fine molecular nutritive changes of the nervous system are almost universally considered to be the cause of the disease, making it, therefore, a neurosis, the seat of the changes is still a much disputed point. He obtained the best therapeutical results from bromide of potash, morphia, and the galvanic current. In an appendix the author reports four additional cases of the affection, in two of which shedding of the nails took place, accompanied, in one instance, by falling out of the hair. He shows still further the positive influence of extirpation of the thyroid gland on the production of tetany, and calls attention to the fact that attacks seldom occur in summer, cold seeming to be a strongly exciting factor.

REVIVAL OF TARTAR EMETIC IN TREATMENT OF PNEUMONIA.

The amount of attention that has been given this ancient use of an old drug shows that it has not been so quite forgotten everywhere as it seems to have been here in America. Cf. Mosler, *Deut. med. Woch.*, 1887, p. 1031; BRÜCKNER, *ibid.*, 1888, 1, No. 22, p. 447; *ibid.*, August 16, 1888, p. 686.

In Germany the drug has been given after the method of Lebert. Of tartar emetic gr. jss-gr. v are ordered in \mathfrak{z} vj of water, of which solution \mathfrak{z} ss (= gr. $\frac{1}{2}$ +) is given every hour till vomiting or diarrhœa occurs, and then every two hours. In most cases these symptoms from the side of the gastro-intestinal tract will cease even under the continued use (Lebert, Brückner); if not, or if opium does not control them, the remedy is to be given up. The tolerance is very variable. Usually, after one or two doses, there is vomiting, which brings great relief, then four to eight watery stools, then sweating and an increased expectoration. The pain and dyspnœa are much relieved. The

well-ascertained physiological action of tartar emetic is in diminishing the blood-pressure, and its therapeutical action in pneumonia is probably to be found in this effect on the pulmonary circulation (Lebert). The clinical results from its use in the hands of these observers have been encouraging. Certainly most physicians would rejoice to have forty successive cases in hospital practice without a death! (Mosler).

DR. ARTHUR JAMISON, basing his conclusions on the careful study of 213 personally observed cases, in 155 of them has acquainted himself with the later history of the case and secured the opportunity of a physical examination at a period not less than two years after the attack. This after-history, he considers, should be the guide to treatment, for in 74 of the 155 examined he found traces of an unresolved pneumonia, viz., dulness of affected side, *râles*, etc., and 12 of the cases died of phthisis. Of the 81 found free from signs 65 *had been treated by tartar emetic*. Not only did physical signs persist in many cases, but he ascertained that many patients, though discharged as well after treatment by the usual methods, had for months some cough and expectoration, constant feeling of uneasiness, flatulent distention after meals, and in general were not up to par. On the basis, therefore, of much comparative trial of all methods of treatment, coupled with this after-investigation, Jamison recommends tartar emetic as a continued remedy, ascribing to it the merits of relieving the distress of the first stage and of easing the strain of breathing, while it is superior to everything else in inducing the greatest degree and rapidity of resolution, as tested by the after-condition of the lung. He gives it in doses of one-twentieth of a grain for young adults every hour, but less frequently to older persons. When the symptoms are relieved it is given less often, but still continued several days or even a week after deferescence. In no case of the large number treated has it caused either vomiting or diarrhœa. It is combined with a little paregoric. Dilute nitric acid is preferred in the after-treatment.—*Brit. Med. Journ.*, June 30, 1888.

PACZKOWSKI also reports a very large series of 532 pneumonias treated by Kermes mineral (antimon. sulphurat.). The mortality in this great series was only 1.69 per cent! The drug should be freshly prepared, and the earlier given the better. He makes the astonishing statement that if given on the second or third day the crisis occurs within twenty-four hours, sometimes in eight. It is given in the following formula:

Kermes mineral	.	.	.	.	.	.	.	gr. xxx.
Ext. digitalis	.	.	.	.	.	.	.	gr. ijs.
Opil	.	.	.	.	.	.	.	gr. j.

Divide in pil. no. xxxij. Two pills every two hours, and after the crisis two every three hours till convalescence is established.—*Deut. med. Wch.*, 1888, No. 29, p. 607.

CREASOTE AND IODIDE OF POTASH IN PHTHISIS.

G. STUECKER (*Therap. Monatsheft.*, 1888, 385) has studied the conditions for the employment of these two drugs, and concludes from his experience that each has its limited sphere of action. Creasote is useful in those cases of phthisis of the nature of caseous pneumonia; while iodide of potash is to be preferred in fibroid contraction of the lung with adhesive pleuritis. In

mixed forms of cheesy and fibrous tuberculosis the one or the other of the two drugs is to be employed, depending on whether the cheesy or the fibrous element predominates. In a third group of cases, in which the involvement of the bronchial mucous membrane produces a purulent or mucous bronchitis, the employment of the iodide is entirely excluded, and the balsams are to be given with or without creasote. A fourth group, in which the symptoms of emphysema are predominant, is to be treated with iodide of potash. Contraindications for the use of creasote are tuberculosis of the intestine, amyloid degeneration, and the late stages of phthisis. Contraindications for the use of iodide of potash are tendency to hæmoptysis, even slight lesions of the larynx (on account of danger of œdema of the glottis), ulcerative processes in the trachea, insufficiency of the kidney of whatever nature, and severe iodism.

MOVABLE HEART.

RUMPF (*Therap. Monatsheft.*, 1888, 382) reports five cases of extreme movability of the heart, arising after the treatment of obesity or from emaciation. In one case, in which the treatment had caused a loss of fifty pounds, all the organs were normal, and when the patient was erect or lying on the back, the cardiac dulness was in the usual position and of the usual shape. When, however, he lay on the left side, the apex beat was removed to the middle axillary line, and the cardiac dulness left the sternum, only touching it at the insertion of the third rib. If now a position on the right side was assumed, the absolute heart dulness disappeared entirely, and a relative dulness of only two centimetres on each side of the sternum was found, extending from the fifth rib to the sixth intercostal space, while the impulse was felt close to the sternum in this space. The total range of movement of the apex beat equalled thirteen to fourteen centimetres. The physical examination of the other four cases gave very similar results. The symptoms of all were weakness, dizziness, and inability to lie on the side. When the attempt to assume this position was made, there developed pain, oppression, a sense of anxiety, and an increase of fifty to sixty beats in the pulse rate.

An interesting question is, whether the loss of fat resulting from the treatment was the cause of the abnormal movability. The examination of a large number of healthy men showed that only a slight displacement of the apex beat or of the cardiac dulness occurred on change of position. On the other hand, in a number of advanced cases of pulmonary tuberculosis with great loss of bodily weight there was a very considerable displacement of the apex beat when the patient was lying on either side. The same condition was observed in a patient with progressive muscular atrophy, who had lost forty pounds weight. The author does not hesitate, therefore, to consider the treatment for obesity the essential cause of the abnormal movability of the heart in the cases which he reports.

CONGENITAL NARROWNESS OF THE AORTIC SYSTEM.

O. FRAENTZEL (*Deutsch. medicin. Wochenschr.*, 1888, 589) reports several cases of disease of the circulatory apparatus apparently due to a congenital

narrowness in the aortic system. Two of the cases were confirmed by autopsy. The subjective symptoms are those of heart disease, but the heart sounds are clear, the second sound often accentuated, and the heart exhibits some dilatation. The symptoms are especially like those of cardiac overstrain, but develop in persons who have undergone no, or but slight, exercise. The hypertrophy of the heart begins in youth, is followed by dilatation, and finally by the signs of insufficient compensation. The arteries of the body are small, their tension high, and the face often strikingly pale. It is probable that the cases of congenital narrowness of the aortic system are much commoner than has hitherto appeared.

A STUDY OF THE ARTERIES AND VEINS IN BRIGHT'S DISEASE.

ARTHUR V. MEIGS (*Medical Record*, 1888, 34, 1) reviews somewhat the state of the question regarding the origin, nature, and relations of Bright's disease and of heart disease, and illustrates his remarks by microscopic drawings of sections of the bloodvessels. He concludes that in the so-called chronic Bright's disease we have to do with an affection widespread in its effects, and that the most characteristic and probably most important changes are those of the intima of the arteries; in which changes it is likely that the veins always participate. Alterations in the muscular coat and the adventitia, though often present, are probably secondary to those of the intima, and are by no means so important in their effects. The process seems to be coextensive with, and, it is likely, is a part of the change in the large arteries which is so common and so well known as atheroma. Finally, in the absence of knowledge concerning the participation of the nerve substance, it seems most probable that the earliest of the now known pathological steps to make its appearance is the alteration of the intima of the bloodvessels.

THE ETIOLOGY OF ACUTE BRIGHT'S DISEASE.

JULIUS MANNABERG (*Centralbl. f. klin. Med.*, 1888, 537) reports eleven cases of acute Bright's disease, in eight of which he found the streptococcus discovered and described by Lustgarten and himself some time ago. The quantity of the cocci always stood in direct proportion to the severity of the disease in general, and to the variations in the phases of the individual cases. In fatal cases the urine often contained enormous numbers of the microorganisms. In other cases the numbers diminished as the secretion of urine increased, and completely disappeared when the other symptoms began to abate. They could not be distinguished morphologically from the streptococci of erysipelas and of pus, but through cultures, which the author describes, were found to be entirely different from species previously known. They may be stained by various aniline colors, but it is necessary to avoid heating the cover-glass in drying the specimen. Control experiments made on the urine of various patients with pathological conditions, including contracted kidney and passive congestion, amyloid degeneration, and tuberculosis of this organ, invariably failed to reveal any of the cocci. Experiments with animals showed that the cocci were decidedly pathogenic, at least for dogs and rabbits. There were produced, namely, more or less intense evidences of disturbance of the kidneys three or four days after inoculation. Renal epithelium, blood, casts, hæma-

toidin crystals, albumen, and streptococci were found in the urine, and the last mentioned proved themselves identical with those used for inoculation. The author believes, therefore, that certain forms of idiopathic acute Bright's disease are the result of the action of bacteria; it being already admitted that nephritis occurring in the course of the general infectious diseases is of this nature.

HYDROPS INTERMITTENS ARTICULORUM.

FRIDENBERG (*Medical Record*, 1888, 33, 657) reports, from his own practice, two cases of a peculiar vasomotor affection of the joints, and collects twenty-four others from the literature of the past twenty years. This consists of a serous exudation into one or more joints, arising without appreciable cause, and recurring and subsiding spontaneously at certain definite periods. It would certainly appear to be a vasomotor neurosis, since in five cases palpitation, syncope, exophthalmos, rigors, and transpiration were also noted; and in two instances there were fully developed symptoms of Basedow's disease. Various marked emotional disturbances were present in others. Pregnancy exerted a remarkable influence in eight out of nine cases in which it occurred, in that there was meanwhile a complete cessation of the attacks. The exact pathology of the affection is uncertain, as no case has come to autopsy yet. The rapidity with which the effusion appears and is again absorbed, shows that it is a passive non-inflammatory dropsy due to some temporary interference with the vasomotor control. Periodicity is a very marked characteristic, as it often is of other vasomotor diseases. It has not in these cases anything to do with malaria. In the only one of the author's cases to whom treatment could be regularly given, great permanent improvement, and even temporary cure followed the application of galvanism to the medulla, combined with tonic and alterative medication.

CALCIUM CHLORIDE IN GLANDULAR AFFECTIONS OF THE NECK.

THOMAS J. MAYS (*Archives of Pediatrics*, 1888, 471) reviews the employment of calcium chloride, formerly used in scrofulous affections. He has used it for several years, especially in scrofulous affections of the neck, and found it to act admirably in many cases in which cod-liver oil internally and iodine externally had proved futile. It can be given in milk or water in doses of two to four grains for children, and ten to twenty grains for adults. The best vehicle, however, is syrup of sarsaparilla. It must not be confounded with the chloride of lime used for disinfecting; and to avoid this confusion the *granular* chloride of calcium should be ordered.

NAPHTHOL IN STOMATITIS.

D. W. LONEY (*Medical Record*, 1888, 33, 664) has used naphthol in several cases of stomatitis with good results. It is indicated wherever a reliable disinfectant and antiseptic is required. In a case of mercurial stomatitis it gave almost immediate relief to many of the unpleasant symptoms, and in a case of stomatitis in a woman which had resisted ordinary treatment it was all

that could be desired. It may be used as a mouth wash or gargle, is not unpleasant in taste, and is non-poisonous in its effects on the system.

LACTIC ACID AND DIET IN INFANTILE DIARRHŒA.

FRANK WHITEFIELD SHAW (*N. Y. Med. Journ.*, 1888, xlviii. 123), following the rules laid down by Hayem, has been employing lactic acid in the green diarrhœa of infants. He has also extended its application to all forms of infantile diarrhœa, and with excellent results. Since 1887 he has administered this treatment to over 100 patients, varying in age from ten weeks to twenty-four months, and with great variety in the intensity of the disease. A child under twelve months received one-half a teaspoonful of a two per cent. solution every hour; or if the discharges are very frequent, a teaspoonful every hour for six doses, and then a half a teaspoonful every hour. Over twelve months, a teaspoonful is the ordinary dose. Within a period of twelve to seventy-two hours the character of the alvine discharges begins to change; the greenish becoming less watery and assuming a yellow tint, and the yellowish watery, or the bloody passages assuming a greater consistence without the offensive odor. The general results were so satisfactory that the author has abandoned all other drugs in this disease. Under its use also vomiting is controlled, temperature reduced, intestinal pain quieted, and restlessness and sleeplessness overcome.

As most of the patients treated were of the poorest class, he gave special attention at the same time to a proper regulation of the diet. An exclusive diet, either of breast milk or of artificial food, did not seem to give good results. Food too rich in fat cannot well be tolerated, and as mother's milk is sometimes open to this objection, a small quantity of the prepared food was administered before nursing. The proportion of caseine, too, was rendered smaller thereby, and when lactic acid was also employed as the medicine, recovery was usually speedy.

SURGERY.

UNDER THE CHARGE OF

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TRAUMATIC APHASIA RELIEVED BY THE REMOVAL OF A BLOOD-CLOT FROM THE CEREBRUM.

BALL (*Dublin Journal of Medical Science*, September, 1888) records a case of peculiar interest successfully operated on by him for the cure of aphasia. The patient had been struck a blow in the head with a penknife ten days before admission to the hospital. He had noticed, since the blow, increasing difficulty in using the right words. On examination a small scab was found

adherent to the scalp, over the squamous portion of the left temporal bone. This, when detached, showed a cicatrix extending deeply through the temporal muscle. There was well-marked motor aphasia, word-blindness, and word-deafness. No paralysis could be detected. Five days after admission, as the symptoms had increased, an operation was determined on. A flap was turned down including the cicatrix, and a wound of the squamous portion of the temporal bone, such as could be caused by the small blade of a penknife, was found. A circle of bone was removed, containing in its centre the wound in the bone. The knife was found to have penetrated the dura mater and brain. The dural wound was enlarged and a Sims' forceps was passed into the brain wound, and was gradually separated. A dark-colored blood appeared and was extruded by the internal brain pressure; more clot was removed by Sims' forceps and weak perchloride irrigation, a drainage tube was introduced, and the external wound was sutured. On the evening of the same day the patient carried on a long conversation with very few mistakes in his selection of words. The following morning aphasia was again increased, but disappeared on cleaning the blocked drainage tube. The recovery was, after this, uninterrupted and complete.

TRAUMATIC SUB-DURAL ABSCESS OF THE BRAIN.

STOKES (*Dublin Journal of Medical Science*, September, 1888) alludes to eleven recorded cases of sub-dural traumatic abscess treated by trephining, with successful issue in five. He also records two cases operated on by himself, in the first of which the abscess was not reached and the patient died. In the second the abscess was only found by sinking a hypodermatic needle to its whole depth into the brain substance. An ounce and a half of pus was removed, and the abscess cavity was washed out with a one per cent. solution of carbolic acid.

In connection with these cases Stokes makes the following propositions:

1. That after the primary symptoms of cerebral traumatism have subsided, there is frequently a latent period of varying length during which there are no distinct brain symptoms connected with abscess formation whatever.
2. That their appearance is, as a rule, sudden, and, if uninterfered with, run a rapidly fatal course.
3. That the occurrence of pus production resulting from cerebral traumas is not incompatible with a perfectly afebrile condition.
4. That this latter fact will probably aid in differentiating traumatic cerebral abscess from meningeal or encephalic inflammation.
5. That both as regards color and consistence there is great variety in the contents of cerebral abscess cavities, and that, as shown in Wilm's case, published by Rose, of Berlin, they may be transparent.
6. That antisepticism has largely diminished the risks of the operation of trephining.
7. That having regard to the great mortality of cases of cerebral abscess when uninterfered with—viz., from 90 to 100 per cent.—the operation is indicated even when the patient is *in extremis*.
8. That in the case in which the trephine opening does not correspond to the situation of the abscess, exploratory puncture and aspiration may be employed.

9. That by the adoption of this measure the necessity for multiple trephine openings can be largely obviated.

10. That the employment of a blunt-pointed aspirating needle, as suggested by Rentz, is probably the safest mode of exploration and excavation.

11. That drainage is desirable in the after-treatment of such cases.

12. That both during and subsequent to operative interference in these cases a rigid antisepticism is imperatively required.

SPLENECTOMY.

Two cases of splenectomy, performed by Fritsch, are reported by ASCH (*Archiv für Gynäkologie*, Bd. 13, Heft 1).

1. Married woman, æt. thirty-one, has menstruated regularly since her eighteenth year till the middle of May, 1887. Since the second week in March has suffered slight pain in the region of the spleen, and has felt a small nodule beneath the lower border of the ribs. For this and loss of appetite she consulted a physician. Examination showed a moderate enlargement of the spleen, without noticeable change in other organs. Together with increasing languor and complete anorexia there was a steady increase in the size of the tumor.

Admitted to the hospital June 20, 1887. Present condition: small, feeble woman, of moderately anæmic appearance. Thoracic viscera normal; abdomen projected on the left side by a firm movable tumor, extending from the left nipple line two and two-fifths inches below the border of the ribs, to the linea alba, midway between the umbilicus and symphysis; about nine inches in length, in the form of a bean, convexity outward, notched at its upper third. Uterus somewhat enlarged, slightly retroverted, movable, with virginal but patulous os. Blood normal; no disturbance in the proportion of white to red corpuscles. From the rapid growth of the tumor and the healthy condition of the organs, the diagnosis of neoplasm of the spleen (probably sarcoma) was readily made. The condition of the womb indicated pregnancy in its first month.

After the customary preparation for laparotomy, the operation was begun by a four-inch incision in the linea alba, beginning two inches above the umbilicus, and sweeping around the latter to the left. The tumor, dark blue-red in color, had formed no adhesions and was slowly pressed from the abdominal cavity. The pedicle was formed by the two layers of the gastro-splenic omentum investing the vessels. The tail of the pancreas was in close relation to its upper part. The pedicle was transfixed by a needle carrying a double silk thread, tied in two sections, and cut two-fifths of an inch peripherally to the ligatures. The two omental leaflets were then united by a continued suture, and the whole pedicle finally included in a ligature, leaving a small but well-fortified stump. This was coated with iodoform, returned to the peritoneal cavity, and the abdominal wound was closed by means of deep silk sutures and an occlusion bandage. The operation lasted twenty-five minutes.

The case ran an apyretic course; the wound healed by primary intention; the patient was discharged cured in less than three weeks from the time of operation. There was slight swelling of the inguinal and axillary glands, but no enlargement of the thyroid. The examination of the blood showed it to

be normal. The patient complained of a dry throat and some cough. Her pregnancy ran a natural course, and terminated in the birth of a dead child, which one month before had been living. The patient had felt no motion for eight days previous to delivery. Both foetus and after-birth were extruded with extraordinary ease, and convalescence was rapid and uninterrupted. The cough and the pain in the left side, of which the patient had previously complained, left her; her appetite increased, and she is now in perfect health. The tumor weighed five and a half pounds, and proved, on microscopical examination, to be a lympho-sarcoma.

2. Woman, æt. twenty-six; delivered of a healthy child at full term, February 4, 1887. On the fifth day the patient left her bed, but felt from that time increasing languor and weakness. In spite of a good appetite and the ingestion of an abundance of nourishing food, the patient became rapidly pale and emaciated. Fourteen days after delivery a painful nodule was observed in the splenic region, which rapidly increased in size. There was pain, becoming more acute for a time, but gradually diminishing till in five weeks it entirely disappeared. The nodule, however, grew with great rapidity. After a period of fruitless treatment with quinine, iron, and other medicines, an operation was determined upon. Examination showed an exceedingly large tumor of the spleen. The whole abdominal region of the left side from the ribs to the pelvis was taken up by the smooth, hard swelling. Dulness on percussion began a hand's breadth above the lower border of the ribs, and extended toward the right as far as the ensiform cartilage, downward to the os pubis. A deep notch could be felt a finger's breadth above the navel, in the inner border of the growth. The patient was extremely blanched and emaciated; the pulse was rapid; there was some dyspnoea. No abnormality of any organ except the spleen; no glandular enlargements; no tenderness over the sternum or any other bone; no hemorrhage; no disturbance of vision; menstrual flow slight but regular. Patient complained of great giddiness, constant pain in the head, shaking and shivering of the bones, and extreme exhaustion on the slightest effort, but suffered principally from shortness of breath, and the mechanical burden of her tumor. On examination of the blood the relation of white to red was as one to eight. The patient insisted upon an operation, although medical treatment had produced a distinct gain in strength and general condition.

Incision in the middle line six inches long; no adhesion to the parietal peritoneum. The tumor was carefully pressed from the abdominal cavity, a slight intestinal adhesion was ligatured and tied without loss of blood, the moderately broad pedicle was ligated in several portions, and, four-fifths of an inch peripherally to the line of ligature, the tumor was cut away. The stump was carefully examined, included in a final ligature, and returned to the abdominal cavity. No bleeding could be observed, either from the stump or from a small surface lying near it, where the spleen had been adherent. The hæmostatic forceps placed on the bleeding points of the abdominal wound were removed without a recurrence of hemorrhage, and after a few minutes' observation the incision was closed by deep sutures, placed closer than usual, and a very tight occlusion dressing. No symptoms of danger for four hours, when the patient became rather suddenly short of breath; the pulse was 96 to the minute, and moderately full. No blood was found on the dressings.

The dyspnœa progressively increased till the respirations became gasping, and the patient perished five hours after the completion of the operation. The pulse was never above 100 to the minute, and was, in relation to the other signs of anæmia, surprisingly full.

The extirpated spleen weighed sixteen pounds, and presented the typical picture of leucæmic hypertrophy.

Autopsy. A large coagulum in the subcutaneous connective tissues about the wound. Peritoneal cavity filled with reddish-brown blood. About the former position of the spleen numerous scattered sub-peritoneal hemorrhages. Similar effusions into the great omentum.

Of 90 splenectomies, tabulated by Asch, 51 were successful. The majority of these successful cases were for prolapse. Fourteen times the operation has been successfully performed for the cure of wandering spleen, three times for cystic degeneration, twice for sarcoma, four times for hypertrophy of the spleen, once for echinococcus cyst, once for leucæmic enlargement.

The thirty-nine unsuccessful cases were all subjected to operation for the removal of large splenic tumors. Twenty-one cases were leucæmic. There is more or less probability that the other unsuccessful cases were not leucæmic. Death occurred in most of these cases within a few hours of the operation. The cause of death was, with one exception, extensive bleeding.

From this table it would appear that for various diseased conditions of the spleen extirpation is safe, easy, and justifiable, but that leucæmic enlargement should constitute a distinct contra-indication to the operation. To this opinion Asch does not conform. The danger of leucæmic hypertrophy rests on its bulk, and operations should be undertaken early in these cases. The rule should be, "if it is decided to remove a spleen, whether it be leucæmic or diseased in other ways, an early operation must be advised."

REMOVAL OF CARCINOMATOUS TONSIL BY EXTERNAL INCISION.

FOWLER (*Brooklyn Medical Journal*, vii. No. 9) reports a case of primary carcinoma of the tonsil removed by external incision.

Mrs. L., aged sixty-seven, suffered for nine months from an enlargement of the left tonsil, which interfered with deglutition. Two cousins had died of breast cancer. On examination a lobulated slightly movable growth the size of an English walnut was found, occupying the site of the left tonsil. Lymphatic enlargement beneath the posterior border of the sterno-mastoid. Pain, aggravated by swallowing.

Etherized. Head extended and turned to the right. Incision from just below the lobe of the left ear down along the anterior border of the sterno-mastoid to a point slightly below the level of the hyoid bone. To the lower extremity of this incision was carried another, beginning midway between the angle of the jaw and the symphysis menti. The flap was drawn up. External jugular tied and divided; the facial and lingual arteries treated in the same way. The hyoid attachment of the stylo-hyoid was divided, the muscles and other structures retracted, the tumor pressed outward by the fingers passed into the mouth, and all diseased tissues removed by means of the galvano-cautery. The incision was now prolonged backward, the enlarged lymphatics, some of them adherent to the sheath of the common carotid.

were shaved away, and the wound was drained, sutured, and dressed. Healing was, in the main, by first intention. The patient was entirely relieved of her dysphagia, and she suffered from no recurrence of the disease *in situ*, though she finally perished from gastric cancer.

For the performance of external pharyngectomy Wheeler makes an incision from the greater cornu of the hyoid bone to the hyoid cartilage, ligating the superior thyroid artery.

Gussenbauer makes an incision from the ear to the greater cornu of the hyoid. Finding the posterior belly of the digastric, the parts beneath and back of it are divided into the maxillary region.

Weil and Mikulicz make an incision three and a fifth inches long behind the ascending ramus of the inferior maxillary bone, including the parotid gland if necessary. The facial nerve should be spared. The cut is continued along the lower border of the body of the jaw, a double ligature being thrown around the lingual and facial arteries.

Langenbeck, in 1879, opened the pharynx by making an incision beginning midway between the symphysis and angle of the jaw and running downward and outward to the thyroid cartilage; the incision was deepened, and bleeding prevented by tying the vessels before they were cut; if necessary, the hyoid attachments of the stylo-hyoid and digastric were divided.

Cheever incises along the lower border of the body of the jaw, and saws through the inferior maxilla in front of the masseter. The hyoid muscles are divided, the bony fragments are pulled apart, and the tonsil is pushed outward from the pharynx.

Kuester makes an incision beginning at the corner of the mouth, carried back obliquely in front of the insertion of the masseter and thence to the sterno-mastoid. The bone is sawed in the direction of this incision.

Langenbeck divides the cheek through its entire thickness downward and backward from the angle of the mouth to the lower border of the jaw in front of the masseter muscle; from this point the incision curves backward under the jaw to the sterno-mastoid. The jaw is sawn through in the direction of the incision.

THE TREATMENT OF CLUB-FOOT.

HEINEKES's method of treating club-foot is presented by GRASER (*Beilage zum Centralblatt für Chirurg.*, No. 24, 1888) as completely successful in the most marked cases.

Briefly, the method consists in forcible reduction of the deformity, and fixation by means of a plaster bandage. Section of the tendo Achillis is condemned as removing an important aid in the correction of supination and adduction. The first dressing may accomplish very little; subsequently the tissues are more yielding and distinct progress is made by each manipulation. The treatment lasts from six months to a year and a half, according to the difficulty of the case, and is only completed when, on standing without the bandage, the foot rests in complete pronation and dorsal flexion. When this stage is reached further treatment is superfluous.

OTOLOGY.

 UNDER THE CHARGE OF

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 SYPHILIS OF THE AURICLE, OF THE MIDDLE EAR, AND OF THE
INTERNAL EAR.

DR. JONES (*St. Louis Courier of Medicine*, April, 1888) gives the following history of a case: A woman, thirty years old, complained of pain in the right ear. There were also diminution of hearing, and general redness of the membrana tympani. The voice was hoarse, and the entire velum palati deep red. A large cicatrix surrounded the external auditory meatus, reaching to the tragus, the anti-tragus, and part of the concha, while the auricle in general was considerably deformed. Three months later the patient presented herself with an ulceration ten days old, occupying in the left auricle a position similar to that in the right ear. The ulcer had irregular edges, and the cartilage, which was exposed, showed a number of superficial abrasions, which looked as though made with a punch. She complained of pain in her ear, pulsating tinnitus, autophony, and facial neuralgia on the left side. Three days later the left ear became suddenly and absolutely deaf. The diagnosis of syphilis was confirmed by the appearance of a double perforation in the velum palati in the course of a few days.

 FOREIGN BODIES IN THE EAR.

BEZOLD (*Berliner klinische Wochenschrift*, July 2, 1888) formulates the following conclusions regarding the management of foreign bodies which have become impacted in the ear.

1. The removal of foreign bodies from the tympanic cavity by the way of the auditory canal, regardless of the swelling of the walls of the auditory canal and of the distention of vegetable matter, may be an impossibility from the position assumed by the foreign substance.

2. In such cases the state of the hearing is a valuable diagnostic guide; for example:

(a) If the existence of great hardness of hearing, or absolute deafness, warrants the conclusion that a recent injury to the foot-plate of the stapes has occurred, then the removal of the foreign body by means of exsection of the posterior wall of the bony auditory canal, if removal is impossible in any more conservative manner, becomes a vital indication, since the purulent inflammation almost surely attendant upon the pressure of the foreign body in this place will find its way through the opening in the oval window into the labyrinth, and thence by the aquæductus cochleæ and the porus acusticus internus to the meninges of the brain.

(b) If, however, much hearing remains, which would indicate that the foot-plate of the stapes is intact, endeavors may be made, if the foreign substance

is a fruit seed, to extract its watery parts by means of instillations of glycerine, alcohol, and ether. Also forcible injections of water through the Eustachian tube, which often succeed, may be tried, especially if we can still feel that the foreign body is movable by means of a probe.

3. If, in a case of foreign body in the middle ear, whether any hearing is present or not, in addition to purulency of the middle ear, there are local symptoms of inflammation in the neighborhood of the irritant substance, especially in the mastoid, an expectant treatment is no longer advisable (cold, extraction of blood, etc.) as in simple suppurations, but instant opening of the antrum is indicated.

4. The endeavor to remove the foreign body immediately after the operation, which consists in removing the outer mastoid wall and then the posterior osseous wall of the auditory canal as far as the drum cavity, by means of hammer and chisel, is justifiable; and in the case of children at least, in the early years of life, nothing more than precaution against rapidly developed brain inflammation.

SYPHILITIC ULCER OF THE EXTERNAL AUDITORY CANAL.

DR. SKJELDERUP, of Christiania (*Archiv für Ohrenheilkunde*, Bd. 27, Aug. 1888), gives the history of the case of an elderly man who presented in the left auditory canal a linear ulcer, the size of a pea, with infiltrated edges, dirty, pus-covered base, which the patient said had come from his picking a small furuncle in the ear. There was no pain in the ulcer, but a little smarting. After the use of mercurial ointment the ulcer enlarged. Some lymphatic glands beneath the auricle became swollen, but no other glands were then affected. The fauces were healthy, and all specific infection was denied by the patient. Under further use of mercurial treatment, with applications of nitrate of silver, the ulcer steadily enlarged. The diagnosis was: Rodent ulcer; and the treatment consisted now in excision of the ulcer and the swollen glands; healing by first intention. Three months later there appeared faucial and nasal syphilis, with characteristic ulceration on the posterior pharyngeal wall. Large doses of iodide of potash produced a cure without any relapse.

The writer recommends the use of iodide of potassium in cases of ulceration of doubtful origin.

SUPPURATION OF THE MIDDLE EAR WITH FACIAL PARALYSIS AND ELIMINATION OF THE COCHLEA.

DR. H. FERRER (*Sacramento Med. Times*, April, 1888) gives an account of the case of a man, twenty-four years old, who had suffered for many years with an otorrhœa in his left ear, when he suddenly experienced a painful swelling in the mastoid, with attacks of vertigo, becoming more frequent, and facial paralysis on the left side. Trephining the mastoid to the depth of two and a half centimetres showed complete eburnation of the bone. Later a fistula formed at the upper part of the auditory canal, and gave issue to a small piece of bone in which it was easy to recognize the course of the facial nerve. Some months later there was removed from the same fistula the entire cochlea. After this the discharge soon ceased.

OTITIS MEDIA HÆMORRHAGICA IN A CHILD.

DR. THOMAS BARR (*British Med. Journal*, April 28, 1888) gives an account of the occurrence of this unusual disease in a girl nine and a half years old. She was attacked with malaria, insomnia, etc., and in the course of a week there appeared an abundant suppuration from the left ear, above which at the same time there appeared an inflammatory swelling. Two days later there appeared in the middle of the night a considerable hemorrhage from the ear. A physician then tamponed the external auditory canal with iodoform on cotton, but as this caused a reflex cough, it was soon removed. The hemorrhage occurred twice during the same day, and once on the next, but did not reappear. The suppuration, however, continued for some days longer. There was found an irregular perforation in the lower part of the membrana tympani which cicatrized in a few days.

INFLUENCE OF PILOCARPINE UPON THE MUCOUS MEMBRANE OF THE TYMPANUM.

DR. W. KOSEGARTEN, of Kiel, gives a most interesting account of his experiments with the above-named drug (*Archives of Otology*, vol. xvii. No. 2, June, 1888). Politzer was the first to recommend this agent in the treatment of recent cases of exudative disease of the labyrinth, and in syphilis of the same, where the process had not yet become chronic. But he limited its application to recent affections, and discontinued its employment in the course of a week if no good result ensued in that time. Kosegarten undertakes no case which cannot submit to daily treatment for six weeks. He injects hypodermatically one centigramme, and has watched the effect on the mucous tissue of the tympanic cavity. A distinct redness is seen to come on thirteen minutes after the injection, in some cases, and remain visible for forty minutes; then it fades away rapidly. In some cases the redness comes on more slowly. It even appears that the secretion in the middle ear is increased during the effect of the pilocarpine. It is held that this remedy acts both upon the internal and middle ear disease. "By means of returning hyperemia, which may even cause exudation, there ensues pliability of the sclerosed tissues and moistening and softening of adhesions, and in this way the unyielding conducting apparatus again becomes more capable of vibrating; when exudations had become deposited their absorption was brought about." Politzer's want of success is attributed by Kosegarten to too short a trial of the remedy, which can be efficient only when its action is long continued.

MÉNIÈRE'S DISEASE (AURAL VERTIGO).

LUCÆ, of Berlin (*Encyclopædie der gesammten Heilkunde*), thus marks out the course of treatment he has found valuable in these cases: At the beginning, especially in robust subjects, local bloodletting from the mastoid region by means of Heurteloup's artificial leech, then prolonged rest in bed, seems to him an indispensable condition in the proper treatment. As internal medications, he employs chiefly subcutaneous injections of pilocarpine: ergot also may be tried. Iodide of potash is useless. Sulphate of quinine is not advisable, because it is liable to destroy hearing if given in large doses. It should not,

therefore, be used except as a last resort, and with full warning of its danger being given to the patient.—*Annales des Maladies de l'oreille, etc.*, Aug. 1888.

A CASE OF ABSCESS IN THE TEMPORO-FRONTAL LOBE OF THE BRAIN PRODUCED BY EAR DISEASE, IN WHICH TREPHINING AND EMPTYING THE ABSCESS PRODUCED ENTIRE CURE.

DR. THOMAS BARR, of Glasgow (*Archives of Otology*, vol. xviii., and *Archiv f. Ohrenh.*, Bd. 27, Aug. 1888), gives the following account of the above-named disease: The patient, a boy, nine years old, previously strong and healthy, had suffered for one year with a scanty, offensive discharge from the right ear. Three months previous to the time Dr. Barr observed him, the patient had suffered with pain in the affected ear and the corresponding side of the face, attended with fever, and followed by vomiting and great somnolence. Several days later a chill was observed. At the time of the first examination by Dr. Barr, the pain in the ear and head continued, as did also the somnolence. There had been in all six chills; the boy was greatly prostrated, and had a short cough, with purulent, offensive expectoration. The examination of the ear revealed a perforation in the upper part of the membrana tympani (probably in the flaccid membrane) from which a little purulent discharge escaped. All signs of an acute process, or of retention of pus in the ear, were wanting, and the mastoid process was only slightly sensitive to very hard pressure, and externally it was normal in appearance. As however, after a short pause, pain in the ear and head set in again, and the somnolence became very marked, and a slight chill was experienced, Dr. Barr opened the mastoid and removed a little purulent and cheesy matter.

The condition of the patient was not in the least improved by this operation. The pains in the head, especially in the forehead, continued, and percussion of the right temporal region was very painful; the somnolence was still marked. A slight ptosis of the right eye, and a trace of paralysis of the right side of the face, became apparent; the veins of the right half of the head were congested, the right sterno-cleido-mastoid was stiff, and pressure behind the origin of the sterno-cleido-mastoid muscle, where the vein comes out of the posterior condyloid foramen, caused great pain. The general condition of the patient was very poor, irregular muscular trembling was apparent throughout the entire body, pulse slow, weak, and intermittent. From the right ear there suddenly came a copious discharge of pus, very offensive in odor, which seemed to denote that a communication had been formed between the abscess in the brain and the organ of hearing. The chances for a good result from an operative opening of the abscess supposed to be in the temporal bone were in this case the most unfavorable; still, as herein lay the only possibility of saving the patient, the operation was undertaken by Dr. Macewen at Dr. Barr's request.

After complete disinfection of the ear and the region of the proposed operation, a disk half an inch in diameter was removed from the squamous portion of the temporal bone at a point one and a half inches behind the centre of the auditory canal. The slightly congested dura was incised, and into the yellowish-red protruding brain substance, covered with the congested pia, an aspirator needle was inserted in a direction forward, inward, and downward.

At a depth of three-quarters of an inch foul gas was found, and soon thereafter about two drachms of yellow, offensive pus were evacuated. The latter continued to escape when more of the necrotic brain substance was removed. In order to procure a thorough cleansing of the abscess a counter-opening was made at the lower part of the skull, directly above the bony boundary of the auditory canal, in the line of the petro-squamous suture. Through this opening, and also in the reverse direction, the abscess cavity was washed out by means of a solution of boric acid, and then drainage tubes, made of chicken bone, were inserted. The region of the operation was then dusted with boric acid, and bandaged with corrosive sublimate cotton. This dressing was removed, on the average, once a week, and the drainage tube was shortened in proportion to the granulation of the tissue, and finally omitted, the upper one in five weeks. The result of the operation was most satisfactory. In the first week the pulse became quieter, the face became fuller, the ptosis disappeared, the psychical condition improved, and the weight of the body increased. Granulation of the wounds occurred promptly; the lower closed completely, the upper was protected by a piece of rubber bandage until the osseous closure occurred. The otorrhœa ceased under the boric acid treatment, leaving a dry perforation in the membrana tympani.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

SPASMODIC CHOREIC COUGH CURED WITH SPRAY OF METHYL CHLORIDE.

DR. J. GAREL (*Annales des Mal. de l'oreille*, August, 1888) reports the case of a girl, thirteen and a half years of age, who had had an almost continuous choreic cough for two months. Topical applications with cocaine in ten per cent. solution, only provoked fresh spasms and increased their intensity. A strong spray of methyl chloride was played upon the back of the neck and upper part of the spine, as well as upon the anterior portion of the neck. During the process, an assistant made energetic frictions over the part to prevent too deep an action on the tissues. Amelioration began the same night, and gradually increased during two weeks, by which time the cure had become permanent.

LARYNGEAL CHOREA.

PROF. NICOLA TAMBURRINI takes occasion (*Archiv Italiani di Laringologia*, Luglio, 1888), in reporting a case, to question the accuracy of the opinion which refers this affection to motor incoördination of central origin, and to range himself with those who regard it as a sensory lesion producing a peripheral spasm and due to local hyperæmia and hyperæsthesia.

PSEUDO-POLYPUS LARYNGEAL PHTHISIS.

DRS. A. GOUGENHEIM and P. TISSIER (*Annales des Mal. de l'oreille, etc.*, July, 1888) describes a class of polypoid vegetations observed in young subjects, especially in the first stages of tuberculosis, and independently of any other lesion in the larynx. They report one case in which tuberculous dendritic growths were so extensive as to demand tracheotomy, and although recurrences had been frequent, there was no evidence of pulmonary lesion as late as ten years thereafter when the canula was definitively removed from the trachea. These tumors are most frequent at or near the petiolus of the epiglottis, the mesoarytenoid region, and the subglottic space. They are distinct from the well-known similar formations which occur in connection with tuberculous infiltrations and ulcerations.

ACUTE STENOSIS OF LARYNX; TRACHEOTOMY; DEATH FROM SHOCK.

DR. A. TRIFILETTI reports (*Archiv Italiani di Laringologia*, Luglio, 1888) a case of œdema of the epiglottis, with stridor and convulsive movements of the larynx and trachea, in a boy eight and a half years old, with bronchopulmonary fever. Tracheotomy was performed, but the patient died some twenty-eight or thirty hours afterward, without any apparent cause other than shock.

SYPHILIS OF THE LARYNX.

DR. J. GAREL records (*Annales des Maladies de l'oreille, et du Larynx, etc.*, June, 1888) an interesting case of specific perichondritis of the left arytenoid cartilage, the symptoms of which simulated an acute œdema of the larynx; and which was complicated with a sessile fibromyoma, the size of a large pea, situated at the anterior commissure of the glottis.

DR. CHARLES MAURIAC (*Arch. gén. de Méd.*, February, March, June, 1888) has contributed a most valuable and quite exhaustive article on tertiary syphilis of the larynx. It is replete with references and with details of manifestations which are unusual. Considerable attention is given to the laryngoplegias of syphilis and to the means of discriminating them from similar lesions non-specific in origin.

GUNSHOT WOUND OF LARYNX.

DR. HIÉRO STOESEL reports (*Annales des Maladies de l'oreille, et du Larynx, etc.*, June, 1888) the case of a man whose larynx was accidentally penetrated October 6, 1887, by a paper obturator from an old gun at five paces' distance. The missile was immediately expelled by coughing; and then some fragments of cartilage were extracted from the wound. A canula was inserted through the wound. An attempt to remove the canula two days afterward was followed by intense dyspnœa and cyanosis, and it had to be replaced. A fresh fragment of cartilage was removed at the same time. Respiration becoming seriously embarrassed, he entered the clinical service of Prof. Weinlechner, of Vienna. He was aphonic. Both phases of respiration were slightly stridulous. To the left of the median line there was a wound in the thyroid cartilage, surrounded with excessive granulations. The glottis was irregu-

larly quadrilateral, and a whitish prominence projected into the larynx between the slightly tumefied arytenoid cartilages. Another prominence, the size of a small haricot bean, was located at the anterior angle at the side of the epiglottis. From the base of this second prominence, a reddish-gray membrane stretched to the middle of the right vocal cord.

TUBERCULOUS TUMORS OF THE LARYNX.

DR. ARTUR HENNING, of Königsberg (*Berliner klin. Woch.*, July 9, 1888), describes and illustrates a rare example of multiple supraglottic tuberculous tumors of the larynx in a man, fifty-two years of age, who had been hoarse for twelve years. One, the size of a filbert, occupied the left ventricular band; one, the size of a pea, the right ventricular band. These were smooth, ovoidal and sessile. A third neoplasm, which was dendritic and the size of a lentil, occupied the posterior surface of the left arytenoid (supra-arytenoid?) cartilage. In all other respects the laryngoscopic appearances were normal; there being no ulcerative, infiltrative or anæmic evidence of tuberculosis. These tumors were removed with the thermocautery after splitting the larynx; precautionary tracheotomy having been performed as the preliminary feature. The diagnosis of the nature of the tumors was based on microscopic examination by Professor Baumgarten, after their excision. Severe fever set in suddenly five weeks after the operation; unconsciousness followed, and the patient died in forty-eight hours.

LARYNGECTOMY.

DR. WILLIAM GARDNER, of Melbourne, reports (*The Medical Press*, July 25, 1888) a case of total extirpation of the larynx on October 2, 1887, for epithelioma in a male subject, sixty-two years of age, who, on December 25th, was able to go about the streets without pain or cough and with increase in weight. The report is probably a preliminary one, inasmuch as the only reference to the extent of the disease is, that "laryngoscopic examination showed a small ulcer below the left vocal cord."

ULCERATIVE LESIONS OF SOFT PALATE AND LARYNX IN ENTERIC FEVER.

DR. ST. V. VAMOPY (*Wien. klin. Woch.*, August 2 and 16, 1888) describes two interesting cases of ulceration of the soft palate, one of which is illustrated, and discusses the subject in an excellent summary. He concludes that the ulcerative throat lesions in enteric fever are due to the action of the special virus destructive to the glands of the throat, and the same as to the analogous glands in the intestine, and that these ulcers are not, as has been thought, due to pressure and position, or what are known as ulcers from decubitus.

ON THE ANATOMY OF THE EPIGLOTTIS.

MR. MAYO COLLIER (*Journ. of Lar. et Rhin.*, June, 1888) finds that the anatomical descriptions in the books are in several points incorrect. He denies that the glosso-epiglottic ligaments have any connection with the tongue, except by continuity of mucous membrane. He denies the existence of a thyrohyoid membrane. All that he finds is a thin fascia lining the inferior aspect of the thyrohyoid muscle and covering over a quantity of areolar

tissue and fat. This fascia is coextensive with and intimately attached to the hyoid origin of the thyrohyoid muscle, a well-marked interval existing between the two portions on the opposite side.

A NEW DIAGNOSTIC FEATURE IN PARALYSIS OF THE DILATORS OF THE GLOTTIS.

In an article on the pathology of dilatation of the glottis (*Deutsch. med. Wochenschr.*, June 28th, *et seq.*) DR. ED. ARONSOHN, of Berlin, directs attention to the state of the pulse in cases of paralyses of the posterior crico-arytenoid muscles. He finds that the pulse is accelerated in all cases due to disease in the nerve supply. He believes that it may be taken for granted that in those cases in which there is no acceleration of the pulse there is an organic disease behind the point at which the recurrent nerve leaves the pneumogastric, a myopathic paralysis of the posterior crico-arytenoid muscles or an adductor contracture. The acceleration of the pulse is either the expression of irritation of the sympathetic nerve, or the evidence of paralysis of the cardiac branches of the pneumogastric nerve. These cardiac branches come from the inner and motor root of the spinal accessory nerve, just as the inferior laryngeal nerve does; and, therefore, when the cardiac branches of the accessory nerve are paralyzed, simultaneous disturbances of innervation of the musculature of the glottis must also be attributed to paralysis of the laryngeal branches of the same nerve.

TREATMENT OF CARCINOMATOUS STRICTURE OF THE ŒSOPHAGUS.

M. A. F. PLICQUE presents (*Annales de Mal. de l'oreille et du Larynx*, August, 1888) a critical review of the methods of treatment.

I. *Dilatation by catheterization* does not give durable results, for as soon as sounds sufficiently large are passed, spasm or inflammation ensues, which prevents further introduction of instruments, and counteracts all the benefits painfully acquired. Sometimes it excites absolute impossibility to swallow where glutition of liquids had been practicable. Furthermore, cases are only too numerous in which, when the tissues are soft, the catheter penetrates the aorta, the bronchi, or the mediastinum. Finally, the favorable results occasionally attained are usually due to the concurrence of exceptional conditions.

II. *Gastrostomy*. A patient who can swallow liquids has nothing to gain from gastrostomy; and if the operation is performed when aphagia is complete, death cannot be postponed beyond a few days. The operation has but a moral palliative value. Of 145 gastrostomies collated by Lagrange, the mean duration of life was but 19 days. In 36 only, was life prolonged more than a month; and in 24 out of 25 of these, of which the details are given, the operation had been performed before the state of aphagia had been reached. Plicque concludes with Lagrange, that gastrostomy is useless if performed prematurely, and too dangerous when performed late.

III. *The permanent retention of catheters in the œsophagus* is the most desirable method of treatment, although it is yet in doubt whether short tubes are preferable to the longer ones. One great objection, however, is the insecurity of the silk strings attached to facilitate extraction; but it is to be hoped that this difficulty will soon be overcome by some mechanical contrivance.

OBSTETRICS.

 UNDER THE CHARGE OF

EDWARD P. DAVIS, A.M., M.D.,

VISITING OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL.

 OBSTETRIC PRACTICE AT THE BOSTON LYING-IN HOSPITAL.

BOARDMAN (*Boston Medical and Surgical Journal*, No. 9, 1888) reports three months' practice in this hospital, a total of one hundred and twelve cases. Strict antisepsis is practised, and no septic death occurred. But one child died after birth. The complications most frequently met with were successfully treated; a case of multiple fibroids, and three cases requiring craniotomy were especially interesting. In addition to means usually employed, an intra-uterine douche of hot vinegar was found efficient as a hæmostatic.

 THE PRACTICAL RESULTS OF MODERN OBSTETRICS.

FISCHEL (*Centralblatt für Gynäkologie*, Nos. 32 and 33, 1888) reviews the diminution in puerperal mortality resulting from antisepsis, and urges the importance of a better understanding of its technique by practitioners.

The mortality rates of the large maternities of Austria, Germany, Russia, and Bohemia show a diminution of, in round numbers, 50 per cent. from sepsis; the death-rate from this cause having been 1.3 per cent. from 1874 to 1884, and since 1884, 0.72 per cent. to 0.42 per cent. An estimate of the mortality in private practice on the Continent is difficult, because midwives commonly deliver normal cases, and only serious complications are brought to the physician. This mortality is probably much greater than that of the maternities.

Fischel urges that physicians be thoroughly drilled in *innocuous* antisepsis; and that maternities be so managed as to give the fullest advantages for practical study. That this may be safely done with proper discipline is illustrated by the fact that during the winter of 1886-1887 no case of septic infection occurred in Fischel's wards, although the best possible opportunities are given to students to examine cases.

[The superiority of asepsis obtained by the proper use of antiseptics, over antiseptics applied frequently to the patient, as formerly practised, is very suggestive. This usage prevails in the best American maternities, whose septic death-rate is less than one per cent. Fischel's suggestions regarding the improvement of practitioners and students are very pertinent to America. Public sentiment should be educated to permit proper clinical instruction, and the education of the average practitioner should include a practical knowledge of antiseptics and their proper use.—ED.]

 OBSTETRIC PRACTICE AT MARBURG.

AHLFELD (*Deutsche med. Wochenschrift*, Nos. 23, 24, 25, 27 and 28, 1888) reports the work in his clinic for a year; the following are points worthy of note:

In 308 labors the forceps were used but 3 times. The "birth stool," two chairs placed side by side, in contact posteriorly, but separated anteriorly, was used; the patient being placed over the triangular opening. As soon as the head is born, she is placed in bed. This birth stool is used in cases in which forceps are ordinarily employed. There were numerous cases of contracted pelvis. Cephalic version was done three times; podalic, three; combined version twice.

Créde's method of placental expression was employed three times, manual removal of the placenta once. The patient usually lay undisturbed one hour and a half after the child was born; the bladder was emptied and gentle pressure from above sufficed to expel the placenta; post-partum hemorrhage was very rare. None of the mothers confined died; of 308, 226 had no elevation of temperature.

Ahlfeld cleanses gently the child's eyes, nostrils, and mouth as soon as the head is born. If the child does not breathe, it is placed in a warm bath. If no improvement follows in about ten minutes, the child is wrapped in hot flannel and the trachea catheterized to remove mucus; air is not blown into the lungs. Gentle friction, especially over the chest, is of the greatest value. Ahlfeld does not believe that more forcible measures are admissible; his experience with swinging the child by the shoulders and blowing air into the lungs has caused him to reject them.

OBSTETRIC METHODS IN PRAGUE.

MORTON (*New York Medical Journal*, No. 26, 1888) describes the methods of the clinic at Prague, as instituted by Professor Breisky, now in Vienna.

Bichloride of mercury is the antiseptic most used; carbolic acid is used for instruments and for intrauterine injections. [The use of bichloride solution for intrauterine injections resulted in a fatal intoxication, after which it was abandoned.—ED.] Instruments are sterilized in flame, when possible. Catheters are filled with lead in the space between the tip and the eye to prevent septic accumulation.

Rigid antiseptics of practitioner and patient is enforced. Vaginal douches are not given after labor in normal cases. Iodoform is used in the uterus and vagina.

The uterus is not irrigated unless operated upon, or evidence of infection exists. The breasts are uniformly treated before and after labor with boric acid, 4 per cent. solution.

Nitrate of silver, 2 per cent., is used as a prophylactic against ophthalmia. Diarrhœa and indigestion in infants are treated by washing out the stomach with a small catheter, rubber tube and funnel, as advised by Epstein. The child is given white of egg and water for twenty-four hours afterward. Instruction is given in the hospital; septic mortality is 2 per 1000.

[The wards and their arrangement are excellent, and the uniform courtesy of Dr. Fleischmann (in charge) renders the clinic a place of interest and pleasure to foreigners.—ED.]

THE USE OF BICHLORIDE OF MERCURY IN OBSTETRICS.

BLANC (*Lyon Médicale*, No. 34, 1883) concludes, from numerous clinical observations, that solutions of 1 : 4000 and 1 : 5000 should be generally used.

If 1 : 2000 is given by intra-uterine injection, it should be followed by the injection of carbolic acid two or three per cent. The danger of absorption, from the anatomical condition of the parts, is undoubted. Contra-indications to the use of the bichloride are anæmia and disease of the kidneys.

OBSTETRIC ANTISEPSIS FOR NURSES.

CREDÉ and WINCKEL, in the *Text-book for Midwives*, published by the Government of Saxony, advise the following rules for nurses: They should carry with them four ounces of dissolved carbolic acid, nail brushes, soap, sterilized cotton and carbolized vaseline two per cent. The hands and fore-arms should be cleansed with soap, warm water, nail brush, and five per cent. or two per cent. warm carbolic solution. The external genitals of the patient are cleansed with soap, water, and two per cent. carbolic solution; for vaginal douches, fissures in the vagina and fissured nipples two per cent. carbolic acid is used. The strictest prohibitions are enjoined against bringing soiled clothes in contact with the patient.

If sepsis occurs, the midwife who delivered the case should immediately transfer it to another nurse, under a physician's orders; she herself must thoroughly cleanse her body, clothing, and instruments, and deliver no other case for at least five days. Vaginal examinations must be as infrequent as possible, and she must report to the sanitary authorities every two days for a week, that they may know that she infects no other patient. Should other cases arise in her practice within thirty days, she must be quarantined for two weeks.—*Deutsche med. Wochenschrift*, No. 32., 1888.

INTERESTING CASES OF TWIN PREGNANCY.

RIVIÈRE (*Archives de Tocologie*, No. 7, 1888) reports a case of twin pregnancy in which one fœtus and placenta occupied the upper half, and the other fœtus and placenta the lower half of the uterus. A membranous partition separated the two. The placenta of the lower ovum was attached as low as the inferior segment, but as the head was very small, dilatation sufficient to produce placental hemorrhage did not occur.

Two cases are also described in which one fœtus was killed by an injury to the mother, while the other survived. A case of twin pregnancy with obstinate vomiting is also reported, in which labor was induced. Rivière believes that over-distention of the uterus producing exaggerated nervous reflexes is the cause of obstinate vomiting.

COMPRESSING FORCEPS.

At the last meeting of the British Medical Association DR. MORE MADDEN, in the "Address upon Obstetrics," expressed his belief in the forceps as preferable to destructive instruments, and superseding them by reason of its compressing power.

He had devised a short forceps which allowed the fetal scalp to protrude freely through its fenestræ when compression is made; and also long forceps armed with a compressing rod and screw similar to those used in a cranioclast. In addition, the latter forceps is supplied with a pair of detachable traction rods, allowing the exercise of traction at any angle.—*Brit. M. J.*, vol. 1, August 18, 1888.

FRACTURE OF THE SYMPHYSIS PUBIS DURING LABOR.

FAUX (*Bulletin de la Société Obstétricale de Paris*, No. 8, 1888) reports the case of a primipara, aged twenty-five, to whom he was summoned during her difficult labor, the presentation being right occipito-posterior. The pelvis was slightly contracted in its antero-posterior diameter.

Tarnier's forceps were applied, and traction made for intervals during an hour. As the head reached the perineum, crepitus was distinctly perceived by the operator. Tarnier's forceps slipping, Pajot's were substituted, and labor terminated. At the moment when the head was born the crepitus was again perceived. The head of the child was of normal size, and showed no marks of violence; the child was dead, Faux thought from the long duration of labor (forty-eight hours). The mother had moderate post-partum hemorrhage. On catheterizing her the fracture was plainly felt, and the subpubic tissues were bruised and cedematous. Faux had no opportunity to examine the patient's pelvis before labor. No especial malformation was evident. She made a speedy recovery.

CÆSAREAN SECTION AT THE PRESENT TIME.

Among the most interesting recent publications upon this subject is that of LEOPOLD (*Der Kaiserschnitt und Seine Stellung zur Künstlichen Frühgeburt Wendung und Perforation bei Engem Becken*, Stuttgart, Enke, 1888). The section upon induced labor is written by KORN, who analyzes 45 cases; 35 of which recovered without a rise of temperature; 9 had slight febrile disturbance; 1 died of sepsis. In symmetrically contracted pelvis with conjugata vera of three inches, and pelvis whose conjugata vera only is contracted (to two and three-quarters inches), induction of labor is indicated, from the thirty-second to thirty-sixth week.

LÖHMANN contributes a chapter upon version. 107 cases are reported; the mortality from sepsis is nil; the indications are a fœtus of moderate size, at term, in a pelvis whose dimensions are the same as those mentioned by Korn.

PRÄGER reports 71 craniotomies, with maternal mortality, from sepsis, nil. When the time for the induction of labor has passed, and the indications for other methods are wanting, craniotomy gives most excellent results.

LEOPOLD writes upon Cæsarean section. He thinks the time has not yet come for abandoning craniotomy upon the living child; in a portion of the cases it may be rejected; in the greater number it cannot be discarded.

The indications for Cæsarean section are as follows: When nature fails to deliver a living child whose development is so great that version and forceps cannot be employed; and the consent of friends and relatives can be obtained.

The conditions essential for success are: 1. The mother must be in good condition as regards strength, and not advanced in labor; early rupture of the membranes is not an advantage. 2. She must not be already infected by frequent vaginal examinations and efforts at delivery which lacerate the tissues. 3. The heart-sounds of the child must be normal in strength and frequency. 4. Operator and assistants must understand antisepsis and the plan of operation.

The maternal mortality after Cæsarean section during four years at Dresden has been 8.6 per cent., 4.3 per cent. from sepsis. Eighty-seven per cent. of

the children so delivered were saved. An improved method of suturing the uterus is needed, so that conception afterward shall not be rendered more difficult or dangerous.

The indications for Porro's operation are: 1. Infection of the body of the uterus. 2. Stenosis of the cervix and vagina by tumors not connected with the uterus. 3. In cases of myomata in the body of the uterus. 4. In pregnancy in the occluded half of a uterus bicornis. 5. In rupture of the uterus, when the child lives, in a contracted pelvis. 6. In retained placenta, with sepsis, other treatment failing. 7. In osteomalacia.—*Münchener med. Wochenschrift*, No. 30, 1888.

SUCCESSFUL CÆSAREAN SECTION FOR AN UNUSUALLY CONTRACTED PELVIS.

DELIASSUS (*Annales de Gynécologie*, September 1888) reports the case of a woman aged thirty-nine, who had been healthy except for a remarkable deformity, upon whom he performed Cæsarean section at term. The deformity was found chiefly in the superior strait; the left half of the pelvis was abnormally roomy, the other diameters were less altered than the appearance of deformity indicated. Elaborate measurements were made; the antero-posterior diameter of the pelvic inlet was two and three-quarters inches. A marked spinal curvature existed; the general appearance of the patient being that of a person in whom sitting had forced the sacrum and the pelvis downward and forward. Rachitis was not present, and the most reasonable explanation afforded by the history and data of the case was that in early life the patient had suffered from myelitis in the lumbar cord, which had for a long time necessitated the sitting posture during the period of bony growth. The weight of the vertebral column had driven the sacrum forward, causing it also to rotate partially upon its axis.

Cæsarean section was made after the modern method. The interrupted catgut suture was used. The uterine incision was prolonged downward further than usual, resulting in a minute uterine fistula, which was afterward healed by using a drainage tube. Ergotin was given hypodermatically before the operation. Aside from a rapid pulse (120) and constipation, the recovery was uneventful.

INTRA-LIGAMENTOUS TUBAL PREGNANCY; LAPAROTOMY; RECOVERY OF MOTHER AND CHILD.

EASTMAN reports (*American Journal of Obstetrics*, September, 1888) the case of a patient whose abdomen contained a tumor extending from the pubes to the vicinity of the liver. The uterus was normal; the breasts not enlarged; no foetal heart was heard. Menstruation had ceased; paroxysms of intense pain, and increasing abdominal enlargement were present.

Abdominal section revealed tubal pregnancy in the right broad ligament. The sac was opened, and the child extracted without detaching the placenta. The tube was then ligated and removed with the placenta in mass. A clamp was placed upon the neck of the sac, and the pedicle so formed was quilted with silk (cobbler's stitch). The peritoneal cavity was washed out with hot water three times, and a glass drainage tube was employed. Mother and child made a speedy, uninterrupted recovery. The growth and development of

the child have proceeded normally. It was between the seventh and eighth month when delivered.

TUBO-ABDOMINAL PREGNANCY; LAPAROTOMY; RECOVERY.

MEYER (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 15, Heft 1) reports the case of a primigravida aged twenty-seven, who presented the usual signs of pregnancy. During several coitions she felt abdominal pain, from which she recovered; these pains became more severe, and were finally followed by collapse. In this condition, when examined by Meyer, a boggy tumor was found at the left of the uterus, and a diagnosis of extra-uterine pregnancy, with rupture of the sac, was made. The patient was removed to a hospital for further treatment.

For the following three or four weeks her general condition improved. Examination under chloroform confirmed the diagnosis, and led to the belief that the fœtus was developing, in spite of the rupture of the sac; laparotomy was accordingly done. Free hemorrhage followed; the fœtus was rapidly extracted; the placental tissue formed a tumor as large as a man's fist, connected with the uterus by a pedicle two inches wide and four inches long, composed chiefly of the thickened Fallopian tube. The ovary was about three and a half inches from the placenta, toward the median line. The pedicle was ligated with silk just on the inner side of the ovary and severed, and the placenta removed. A pseudo-membrane had been formed by the hæmatocele, which bled profusely. Irrigation with two and a half quarts three per cent. boric acid solution at a temperature of 112° F. failed to check the hemorrhage; a sack of iodoform gauze was introduced which was evenly stuffed with four strips of iodoform gauze, thus equally tamponing the cavity; the upper two-thirds of the wound was closed, the gauze strips and silk ligature used in making the sack were brought out at the lower angle of the wound, and a heavy antiseptic dressing applied.

The wound was dressed three days after operation, and the gauze removed; the sack was removed two days later. An attempt to close the wound was followed by retention of fluid, which necessitated a drainage tube for a few days.

The patient recovered perfectly. The fœtus was nineteen weeks old, and deformed, but was not macerated. Examination of the tube revealed follicular salpingitis with partial occlusion at the abdominal extremity, where the ovum lodged; this Meyer thinks may have been secondary, not primary, to the lodgement of the ovum. The patient had had dysmenorrhœa, which ceased after the operation. Meyer regards the case as probably primary tubo-abdominal pregnancy. [For Breisky's interesting and somewhat similar case, the reader is referred to the *JOURNAL* for February, 1888, p. 209.—ED.]

THE DEVELOPMENT OF THE PLACENTA.

FROMMEL, at the recent meeting of the German Society for Gynecology (*Münchener med. Wochenschrift*, No. 25, 1888), stated the results of experimental studies in the development of the placenta as follows:

The ovum forms, when lodged in the uterus, a crypt in the uterine wall; the contents of this crypt or pocket become the placenta. The villi of the

chorion are formed in the proliferation of the decidua. A ring of vessels forms beneath the blastoderm of the ovum which are derived from an artery. The glands of the decidua disappear as the placenta forms, and take no part in forming the placenta; the ovum puts forth vascular processes of epithelium. The allantois is formed upon the endochorion and sends loops of vessels into the villi of the chorion; the endochorion forms from the amnion. From the vessels just described bloodvessels pass through the decidua deep into the uterine wall. Maternal and fetal blood come into such close contact that both communicate freely.

LEOPOLD and WIENER supported the view that the villi of the chorion are lodged within the bloodvessels.

AN UNUSUAL FORM OF PLACENTAL RETENTION.

LANGE (*Zeitschrift für Geburtshilfe und Gynäkologie*, Band 15, Heft 1), in 638 cases of operative obstetrics, has encountered retention of the placenta 21 times. Two of these cases were caused by abnormally low tension in the abdomen following rapid labor. Credé's method fails in these cases. The placenta is found lying in the lower uterine segment, and is readily removed by the hand; an audible rush of air accompanies the delivery. The accumulation of blood usually found behind the placenta is wanting. Lange believes that the placenta is separated by the last uterine contraction which expels the child; its expulsion is accomplished by the abdominal muscles and the weight of the blood-clot formed behind it. When the abdominal muscles are parietic with negative intra-abdominal tension and the blood-clot is lacking, this form of placental retention occurs. Retention of urine may be similarly caused (Schwarz).

RELIABLE SIGNS OF PARTURITION REMAINING AFTER RECOVERY.

RÖDE (*Nordiskt medicinskt. Arkiv.*, Band 20, No. 6, 1888) considers a dilated, somewhat gaping vulva; scars of varying length in the vagina; and alterations in the shape and structure of the uterus reliable evidence, medico-legal if needed, of previous parturition.

In women who have not borne children the external os uteri may be round or oval. In parous women it is a transverse slit, whose border is fissured. With parous women the distance between the external and internal os uteri is from nine-tenths to three-quarters of an inch; in multiparous this measurement is proportional to the length of the corpus uteri.

But little reliance can be placed upon the breasts; scars in the areola about the nipple are to be noted.

THE RELATION BETWEEN PUERPERAL PSYCHOSES AND SEPTIC INFECTION.

HANSEN (*Zeitschrift für Geburtshilfe und Gynäkologie*, Band 15, Heft 1) has examined 49 cases of psychic disturbance occurring during the puerperium; in 42 of them he found septic infection, in varying degrees, present. In 40 of these cases the mental disturbance was that of hallucinations; in the remaining 2 mania and hallucinations were observed. Of the 7 remaining cases: 1 was acute tuberculosis; 4 had been epileptic or eclamptic; 1 had hallucinations which varied greatly in character; 1 had melancholia.

Hansen concludes that the majority of cases of puerperal psychoses are caused by septic infection or eclampsia; when in the early weeks of the puerperal period a psychosis characterized by acute hallucinations develops, without the presence of any other infection and without a previous eclampsia, the diagnosis of puerperal septic infection is justified even in the absence of fever and other symptoms ordinarily present. The mortality in the 49 cases reported was 26.5 per cent.

INFLAMMATION OF THE SALIVARY GLANDS FOLLOWING LABOR.

ACKER (*American Journal of Obstetrics*, September, 1888) reports the case of a multipara who suffered from inflammation of the salivary glands after normal labor. The attack persisted for seven days; suppuration did not occur. The puerperal period was entirely without other complications. No history of mumps or septic infection was obtainable.

THE TREATMENT OF PUERPERAL ISCHURIA.

SCHATZ (*Wiener med. Presse*, No. 26, 1888) advises dilatation of the urethra, to admit the little finger, in these cases. The procedure is not exceedingly painful and gives good results. Mild cases usually yield to catheterization.

BATTLEHNER advises local applications of cocaine, 10 per cent. solution.

SKUTSCH accustoms his patients, before labor or operations, to urinate while lying in bed; he is thus obliged to have recourse to catheterization very rarely.

EFFECTS OF NON-OXYGENATION OF THE MATERNAL BLOOD UPON THE FÆTUS.

CHARPENTIER and BUTTE (*Nouvelles Archives d'Obstétrique et de Gynécologie*, No. 8, 1888) report the results of experiments upon pregnant rabbits to determine the effect produced by non-oxygenation of the maternal blood upon the fœtus. By one method the animal was immersed in warm saline solution, the abdomen and uterus opened, and the changes in the placental circulation observed. A second method consisted in ascertaining the condition of the fœtus after the mother had succumbed to the loss of oxygen.

It was found that when the oxygen of the maternal blood is gradually lessened, the fœtus perishes before the mother. When the oxygen of the maternal blood is suddenly and markedly lessened, the mother dies first, the fœtus surviving several minutes. If oxygen in considerable quantities was abstracted, the mother surviving, the fœtus died after some time.

The inhalation of carbonic acid gas, in quantity not sufficient seriously to affect the mother, does not affect the life of the fœtus.

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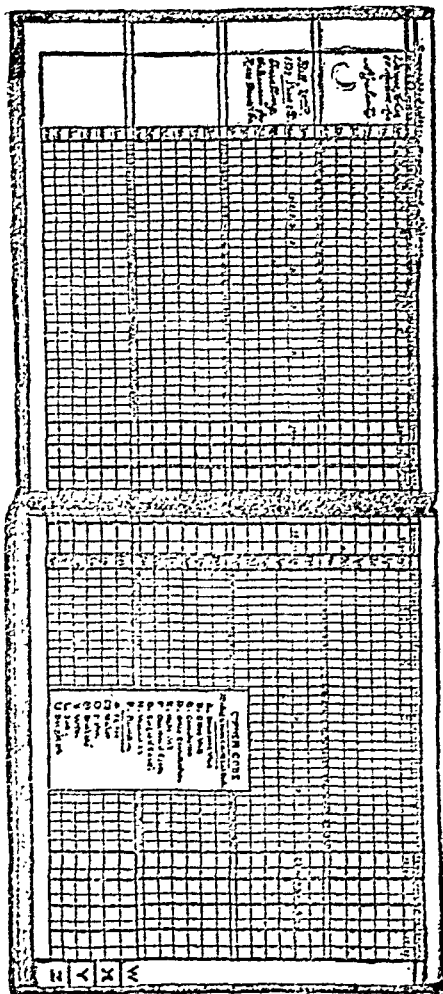
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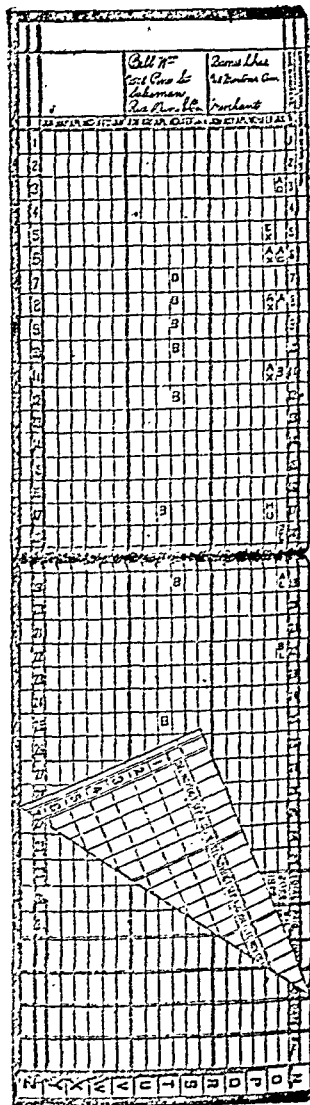
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